THE

AMERICAN GAS-LIGHT JOURNAL.

THE OFFICIAL GAZETTE OF

LIGHT, HEAT, WATER-SUPPLY, AND SEWERAGE.

Rooms—No. 39 Nassau Street, cor. Liberty Street, opposite the Post-Office, New York.

LONDON:—TRUBNER & CO., No. 60 PATERNOSTER ROW.

VOL. III.—No. 45. NEW-YORK, FRIDAY, NOVEMBER 1, 1861. $3 PER ANNUM.

CORNELIUS & BAKER,

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LAMPS, CHANDELIERS, GAS-FIXTURES, &c.,

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MITCHELL, VANCE & CO.,

MANUFACTURERS OF

CHANDELIERS,

AND EVERY DESCRIPTION OF GAS-FIXTURES.

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GAS-FIXTURES.

BALL, BLACK & CO.,

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In addition to their large stock of RICH GOODS,

Offer for sale a large assortment of

CHANDELIERS AND GAS-FIXTURES

Of every description and of the newest styles, Both

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Gas-Fixtures and Chandeliers,

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And 88, 90, 92, 94, 96, 98, and 100 Johnston St., BROOKLYN, N. Y.

E. V. HAUGHWOUT & CO.,

488, 490, & 492 Broadway,

Corner of Broome St., New York,

Gas-Fitters and Contractors for the Erection of Gas-Works.

Messrs. E. V. HAUGHWOUT & Co. have on hand a most extensive assortment of the newest and most desirable styles of

CHANDELIERS, BRACKETS, LAMP-POSTS, AND GAS-FIXTURES OF EVERY DESCRIPTION,

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☞ Gas-fitting done in the most workmanlike manner, and on reasonable terms.

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Gas-Fixtures and Chandeliers,

Ambrose's Patent Coal-Oil Burners, to be used without Chimnies, Patent Paragon Coal-Oil Burners, Patent Improved Excelsior Coal-Oil Burners, Hand Lamps, Columns, &c.

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☞ Every article warranted equal in design and workmanship to any manufactured in the country.

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MANUFACTURER OF

GAS-FIXTURES.

GAS-FITTING IN ALL ITS BRANCHES.

OLD CHANDELIERS, &c., RE-FINISHED IN GILT, OR BRONZED,

OR MADE TO APPEAR EQUAL TO NEW.

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BUTLER'S PATENT PORTABLE ROSIN GAS-WORKS,

FOR

Dwellings, Churches, Country Villages,

As well as for Consumers in Large Cities.

JOHN BUTLER,

No. 112 Fulton st. and 15 Henry st., Brooklyn, N. Y.

FOR LIGHTING RAILROAD CARS AND STEAMBOATS

☞ WITH GAS.

The whole process of Filling the Gas-Holders of a Railway Train, requires but Three Minutes.

Apply to the

NEW YORK CAR & STEAMBOAT GAS. CO.,

No. 117 Fulton st., N. Y.

C. R. WOODWORTH, Manufacturer of

PORTABLE GAS WORKS,

74 WALL STREET, NEW YORK CITY.

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WATER-GAS.—APPLETON & GRAHAM,

AGENTS FOR THE

NEW ENGLAND WATER-GAS CO.,

UNDER THE SANDERS PATENT,

Are prepared to give estimates for Works, and guarantee the cost of Gas not to exceed One Dollar per 1000 cubic feet.

☞ Coal or Rosin Gas-Works altered at small expense.

A. & G. continue as heretofore to erect their improved Rosin and Rosin-Oil Works for Private Dwellings, Factories, &c. For further particulars apply at 56 Washington st., Boston.

Gwynne's Water-Gas Apparatus,

No. 476½ BROADWAY, NEW YORK,

IS FAR SUPERIOR TO ANY OTHER machine in use, as it needs no fire or attention whatever, being entirely self-generating, and takes up but little space, three feet square being all that is required; and as it costs only $100 for ten burners, no family should be without one.

For Towns, Villages, Factories, Steamboats, or any place where steam can be easily had, we have an apparatus which will produce any quantity of rich illuminating gas, by merely decomposing the steam, and passing it through Coal Tar, or any other liquid Hydro-Carbon, the gas costing only 75 cents per 1,000 feet. It requires no purifier or gasometer, as it generates only sufficient gas for the burners lighted, the quantity being gauged by means of a self-acting regulator.

All orders for apparatus or rights must be addressed to the

CARBONIZED GAS COMPANY,

476½ Broadway, New York.

We will also furnish plans and estimates for Gas-Works of any size, and erect the same on satisfactory terms.

CARBONIZED GAS.

IMPORTANT TO GAS CONSUMERS.

THE CARBONIZED GAS COMPANY, No. 476½ BROADWAY, New York, respectfully inform the public, that they are now prepared to supply GWYNNE'S PATENT CARBONIZER, and guarantee by its use to make a saving of 33 per cent. of their gas bills, and at the same time to produce a better light than the city gas. By this process, we warrant that there will be no collections of Carbon in the pipes, a chief difficulty with other machines of the kind.

GAS-FIXTURES.

TIFFANY & COMPANY, JEWELers and importers of elegant artistic PARIS GAS CHANDELIERS, BRACKETS, PENDANTS, &c., in Bronze and Gilt.

No. 550 BROADWAY, NEW YORK.

PHILADELPHIA GAS FIXTURE Works.—Warner, Miskey & Merrill, Manufacturers, Store, No. 718 Chestnut street, Philadelphia. Warner, Peck & Co., No. 376 Broadway, New York, would respectfully inform the public that they continue to Manufacture all kinds of Gas Fixtures, Lamps, Girandoles, Bronzes &c., and that their large and varied stock comprises the simplest as well as the most elaborate patterns, designed by their French artists. They also continue to keep at their store, 376 Broadway, a large and full assortment of all their manufactured Goods. Dealers and others are invited to call and examine.

GEORGE H. KITCHEN & CO., Manufacturers of Fixtures for Gas Light purposes, Wood's Building, No. 561 Broadway, New York. Office of the Inspector of Gas Meters for the State of New York.

GASOMETER RIVETS.

PHILLIPS & ALLEN, Pennsylvania Avenue, above 22d street, Philadelphia.—GASOMETER RIVETS of all kinds.

GAS-METER FLUID.

FLUID FOR GAS-METERS.—The undersigned is prepared to furnish the Glycerine Meter Fluid in quantities to suit purchasers. *It does not evaporate, can be made to stand any degree of cold liable to occur in this country or in Canada, and does not corrode the metals of the meter. It has been in use successfully for the last three years.*

For particulars, references, &c., address the manufacturer, HENRY BOWER,

Box 363, Philadelphia, Pa.

GAS-HOLDERS.

GASOMETERS, RETORT-HOUSE ROOFS, WATER-TANKS,

PURIFYING-BOXES, COAL-CARS, COKE BARROWS,

AND ALL KINDS OF

WROUGHT-IRON WORK FOR GAS AND WATER WORKS.

Manufactured by GEORGE W. KRAFT, Chestnut street wharf, West Philadelphia, Pa.

GEORGE STACEY, CINCINNATI, O., Manufacturer of single and Telescopic Gasholders, Wrought-Iron Bridges, Girders, Joists and Stairways, Coke and Coal Wagons, Rakes, Screens, and other Gas-works tools, Slide and Cup Valves, Bolts, Nuts, Chisels, Ladles, and other tools, Wrought-Iron Roofs, for Slate and Corrugated Iron, Gas Purifiers, Washers, Centre Seal Valves and other Gas apparatus, Boiler-plate Retort Lids. Refers to the following Gas Companies:

Cincinnati, O.
Nashville, Tenn.
Springfield, Mass.
Columbus, O.
Cleveland, O.
Covington and Newport, Ky.
Memphis, Tenn.
Indianapolis, Ind.
New Orleans, La.
Cincinnati, O.

POOLE & HUNT, BALTIMORE, MD., are prepared to execute orders for

GAS-HOLDERS,

IRON-ROOF FRAMING,

And all other descriptions of

Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.

SCIENTIFIC BOOKS.

GAS ENGINEERS' LIBRARY.—A few works indispensable to Engineers, Contractors, and others engaged in the construction of Gas-Works and manufacture of Gas, have been selected, out of a large stock of chemical and other works, and are recommended to the attention of those interested. See page 208, vol. II, of this JOURNAL.

For sale at the Rooms of the AMERICAN GAS-LIGHT JOURNAL, New York.

THE

STERLING GAS-REGULATOR,

Improves the Light and Saves a Large Per Centage of Gas.

MANUFACTURED BY THE

WHEELER & WILSON SEWING MACHINE COMPANY.

It is well known that Printers require the best and most brilliant light In proof of the superiority of these Machines over all others, the following New York establishments are using them, and testify to their excellence:—New York Times, New York Herald, New York World, New York Tribune, New York Sun, Journal of Commerce, Courier & Enquirer, Evening Post, The Zietung, Dispatch, Leader, Scientific American, Advertiser and Spectator, Independent, Daily News, Harper's Monthly and Weekly, Transcript, Mercury, Atlas, Life Illustrated, Albion, Spirit of the Times, AMERICAN GAS-LIGHT JOURNAL, Christian Enquirer, Churchman, Church Journal, Christian Advocate, Christian Ambassador, Christian Intelligencer, Observer, Sunday Times, Sunday Courier.

By order of the New York and Brooklyn Common Councils, these Regulators are now used in the City Halls, Police Stations, Markets, and other Public Buildings in both cities.

They are Warranted by the

WHEELER & WILSON SEWING-MACHINE CO.,

505 BROADWAY, NEW YORK,

To keep in order, and always maintain the pressure of the Gas at the lowest point for a brilliant light and economical combustion. They are so constructed that *under no circumstances can the Mercury get into the Meters, or in any way injure them.*

WARREN'S PATENT WATER & ALARM GAUGE,

For Protecting the Flues and Preventing Steam-Boiler Explosions.

This is a reliable High and Low Water Detector, arranged so as to render it one of the best Water Gauges ever attached to a Steam-Boiler; always presenting before the Engineer at sight the exact height of the water, and if, by oversight or by sudden leakage, the water gets low in the boiler, it will cause an alarm before the water gets below the flues, thereby preventing an explosion. This Gauge can be made to alarm at any point desired as a High Water Detector, thereby preventing the water from getting to that height as to be forced into the cylinder of the engine, often causing serious accidents. Thus it is a High as well as a Low water Detector. For sale by

WARREN & BANKS,

153 Centre st., corner of Canal st., New York,

Where a Gauge is constantly in operation.

GAS, STEAM, SMOKE,

PURE WATER & SOIL PIPE,

FROM

JOSEPH CLIFF,

Wortley Fire-Brick Works, Leeds, England.

T. W. PARMELE, Agt.,

No. 4 Irving Place, N. Y.

JOHN RUSSELL & CO.,

PATENT TUBE MAKERS,

THE OLD TUBE WORKS, WEDNESBURY, AND THE ALMA WORKS, WALSAL, STAFFORDSHIRE,

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AND 35 GRANBY ROW, MANCHESTER, ENGLAND.

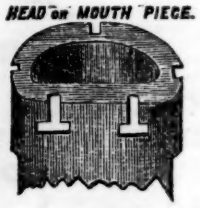
The original Manufacturers of WROUGHT-IRON GAS TUBES, and the Inventors of the Lap-welded Tubes for Locomotive and Marine Boilers. All kinds of TUBES and FITTINGS, whether for Gas, Steam, or Water. Galvanized and Composition Tubes. Chandeliers, and every kind of Brass work for Gas and Steam.

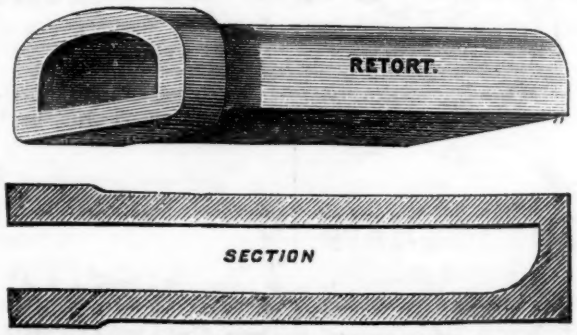
STOCKS, DIES, AND TAPS OF ALL SIZES. CAST-IRON PIPE AND GAS-METERS.

All Goods Warranted.

KING BROTHERS,

STOURBRIDGE, ENGLAND, FIRE-BRICK AND RETORT WORKS.





KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for Burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them

Free from Cracks and Correct in Form.

By great care in Manufacturing, combined with the advantages in Burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize.

RETORT OVENS, FIRE-BRICKS, GUARDS, SADDLES, RABITTED BURS, FLUES, AND QUARRIES, ARE ALL MANUFACTURED OF THE SAME QUALITY OF CLAY.

EVERY RETORT AND BRICK IS BRANDED "KING BROTHERS, STOURBRIDGE."

Apply to E. W. BARSTOW, 83 Maiden Lane, New York, where samples can be seen.

HARRIS & PEARSON,

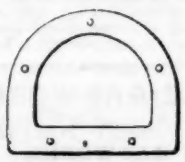
PROPRIETORS OF

Best Glass-House Pot & Crucible Clay.

Manufacturers of Fire-Bricks, Gas-Retorts, and Glass-House Furnace-Bricks of every description.

AMBLECOTE FIRE-CLAY AND BRICK WORKS, STOURBRIDGE, ENGLAND.

OWEN'S PATENT FIRE-CLAY RETORTS.



JOSEPH COWEN & CO.,

BLAYDON BURN, near Newcastle-on-Tyne, England,

Have always been, and are still, the most extensive manufacturers of FIRE-CLAY RETORTS in the United Kingdom, and were the only parties to whom a Prize Medal was awarded at the Great Exhibition, in London, 1851, for

"GAS RETORTS, AND OTHER OBJECTS IN FIRE-CLAY."

J. C. & CO. make Fire-Clay Retorts of all shapes and dimensions, and to fit existing mouth-pieces.

Orders for FIRE-CLAY RETORTS, TILES, BEARERS, and other articles in Fire-Clay, receive immediate attention, and are promptly executed at their Works, as above. Drawings of Settings adapted for Cowen's Patent Fire-Clay Retorts supplied.

AGENTS, MESSRS. MEAD & BELL,

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N. B.- J. C. & CO.'S RETORTS are well adapted for small Gas-Works, as they can be used without an Exhauster.

WHERE GAS-WORKS AND WATER-WORKS ARE WANTED.

We are now publishing regularly the names of the thirty thousand post-towns in the United States, so that builders of gas-works and water-works, and the various manufacturers, may see where are new openings for business. And as each post-master will receive several copies of the AMERICAN GAS-LIGHT JOURNAL, for distribution, the number thus circulated will probably exceed *Three Million Copies. What a chance for advertisers!*

POST-OFFICE TOWNS IN THE UNITED STATES,

ARRANGED BY STATES AND COUNTIES,

Showing where Gas-Works and Water-Works are Wanted.

MISSOURI.

112 Counties, 1091 Towns, 4 Gas-Works, 1 Water-Works

(*Concluded from page* 115.)

La Fayette County.

Atfek,	Freedom,	Renick's Mills,
Berlin,	Greenton,	Snibar,
Chapel Hill,	Hempland,	Tabo,
Cooke's Store,	*Lexington*, (c. h.,)	Wagon Knob,
Dover,	Moss,	Waverly,
Elk Grove,	Napoleon City,	Wellington.

Lawrence County.

Bower's Mills,	Hall,	Mount Vernon,
Centre Creek,	Kain,	Phelps,
Chesapeake,	Long Hollow,	Spring River,
Dunkle's Store,		Verona.

Lewis County.

Bunker Hill,	Durgan's Creek,	Oyster,
Canton,	La Belle,	Primrose,
Deer Ridge,	La Grange,	Williamstown.
	Monticello, (c. h.,)	

Lincoln County.

Auburn,	Hawk Point,	New Hope,
Cap Au Gris,	Lost Branch,	Old Alexandria,
Cuivre,	Lost Creek,	*Troy*, (c. h.,)
Chantilly,	Louisville,	Truxton.
	Millwood,	

Linn County.

Laclede,	North Cutt,	Salem,
Linneus, (c. h.,)	North Salem,	Wyandott.
	Saint Catharine,	

Livingston County.

Austinville,	Colliersville,	Livingston,
Bedford,	Dawn,	Spring Hill,
Chillicothe, (c. h.,)	Dido,	Utica.
	Grassy Creek,	

McDonald County.

Beaver Spring,	Erie,	Pineville,
Bethpage,	Honey Creek,	*Rutledge*, (c. h.,)
Elk Mills,	Looniesville,	Shell's Mills,
Enterprise,		White Rock Prairie.

Macon County.

Bevier,	East Fork,	Pankas,
Bloomington, (c. h.)	Economy,	Rice's Ferry,
Callao,	La Plata,	Stockton,
Carbon,	Macon City,	Ten Mile,
College Mound,	New Boston,	Tullvania,
Coulter's Store,	Newburgh,	Woodville.

Madison County.

Brunot,	*Fredericktown*,(c.h.)	Mine La Motte.

Marion County.

Bear Creek,	Hannibal,	Philadelphia,
Brookville,	Hester,	Sharpsburg,
Emerson,	Marion City,	Warren,
Hanson,	Nelsonville,	West Ely.
	Palmyra,	

Mavies County.

Bloom Garden,	Flat Woods,	Pay Down,
Clifty Dale,	Lacon,	Vienna.
	Painswick,	

Mercer County.

Goshen,	Modena,	Ravanna,
Mercer,	*Princeton*, (c. h.,)	Rosemount,
Middlebury,		Sailne.

Miller County.

Iberia,	Pleasant Mount,	*Tuscumbia*, (c. h.,)
Pleasant Farm,	Rocky Mount,	Ulman's Ridge.

Mississippi County.

Birdsville,	Hopewell,	Rush Ridge,
Charleston,		Wolf Island.

Moniteau County.

California,	Felix,	Jamestown,
Clarksburgh,	High Point,	Oak Point,
Cold Springs,		Tipton.

Monroe County.

Crooked Creek,	Long Branch,	*Paris*, (c. h.,)
Florida,	Madison,	Santa Fe,
Granville,	Middle Grove,	Somerset,
Indian Creek,		Woodlawn.

Montgomery County.

Big Spring,	High Hill,	Price's Branch,
Danville, (c. h.,)	Lead Creek,	Rhineland,
Elk Horn,	Middletown,	Stockland,
Flint Point,	Montgomery City,	Tiviot,
Green Hill,	New Florence,	Wellsville.
	Prairie Fork,	

Morgan County.

Dogwood Grove,	Minerva,	Syracuse,
Florence,	Mining,	*Versailles*, (c. h.,)
Lone Grove,	Stone House,	Wheatland.

New Madrid County.

New Manrid, (c. h.,)	Ogden,	Point Pleasant.

Newton County.

Almeda,	Grandby,	Julian,
Capp's Creek,	Grand Falls,	Kent,
Cedar Creek.	Jones Creek,	*Neosho*, (c. h.,)
Gates,		Newtonia.

Noddaway County.

Graham,	Littsville,	Sweet Home,
Guilford,	Maryville,	White Cloud,
Hallsa's Ferry,	Narrows,	Xenia.
	Reindeer,	

Oregon County.

Birch Tree,	Low Wassie,	Warm Fork,
Huddleston,	Mammoth Spring,	Webster,
Jobe,	*Thomasville*, (c. h.,)	Woodside.

Osage County.

Bailey's Creek,	Lane's Prairie,	Medora,
Bonnets,	*Linn*, (c. h.,)	Prior's Mill,
Castle Rock,	Lisle,	Rich Fountain,
Chamois,	Loose Creek,	Wallace's Landing,
Fredericksburg,		Westphalia.

Ozark County.

Cowskin,	Isabella,	*Rockbridge*, (c. h.,)
Forest's Store,	Melissa,	Saint Leger,
Helen,	Red Bud,	Selden.

Pemiscot County.

Caruthersville,	Cottonwood Point,	Solitude.
	Gayoso, (c. h.,)	

Perry County.

Altenburg,		*Perryville*, (c. h.)

Pettis County.

Arator,	Greenridge,	Priceville,
Crane Creek,	*Georgetown*, (c. h.,)	Rowletta,
Dunksburg,	Lamonte,	Spring Fork,
Fairview,	Longwood,	Spring Garden.

Pike County.

Ashley,	Clarksville,	Prairie Mound,
Ashburn,	Frankford,	Prarieville,
Bowling Green,	Louisiana,	Spencerburgh,
Charlemont,	New Harmony,	Vannoy's Mill.
	Paynesville,	

Platte County.

Camden Point,	Jatan,	Ridgley,
Farley,	New Market,	Union Mills,
Hampton, (c. h.,)	Parkville,	Weston.
	Platte City, (c. h.,)	

Polk County.

Bolivar, (c. h.,)	Half Way,	Orleans,
Brighton,	Humansville,	Rondo,
Fair Play,		Sentinel Prairie.

Pulaski County.

Debruin,	Little Piney,	Spring Creek,
Humbolt,	Nebo,	*Waynesville*, (c. h.,)
	Relfe,	

Putnam County.

Ayersville,	Mendota,	Shoneytown,
Chariton Mills,	Newtown,	Springville,
Hartford,	Pleasant Home,	St John,
Locustville,	Scotland Ridge,	Unionville,
Martinstown,		West Liberty.

Quapaw County.

Crawford Seminary.

Ralls County.

Cincinnati,	Madisonville,	Pigeon Creek,
Hydesburgh,	*New London*, (c. h.,)	Saverton,
Lick Creek,		Sidney.

Randolph County.

Allen,	Huntsville,	Milton,
Darksville,	Jacksonville,	Randolph,
Fort Henry,		Roanoke.

Ray County.

Camden,	Knoxville,	Prospect Hill,
Crab Orchard,	McLain's Mills,	*Richmond*, (c. h.,)
Hardin,	Millville,	Tinney's Grove.
	Otsego,	

Reynolds County.

Alamode,	Ege Hill,	Logan's Creek,
Centerville,	Lesterville,	Munger's Mill.

Ripley County.

Doniphan, (c. h.,)	Little Black,	Neelyville,
Dry Spring,	Martinsburg,	Pike Creek,
Gatewood,	Mill Creek,	Van Buren.

Saint Clair County.

Chalk Level,	Jenkins' Bridge,	Oseola,
Howard's Mills,	Monagan,	Pleasant Site,
Hoyle's Creek,		Weaubleau.

Saline County.

Arrow Rock,	Elm Wood,	*Marshall*, (c. h.,)
Brownsville,	Finney's Creek,	Miami,
Bryan,	Hazle Grove,	Petra,
Cambridge,	Jonesboro',	Ridge Prairie,
Cow Creek,		South Grove.

Schuyler County.

Cherry Grove,	Inkerman,	*Lancaster*, (c. h.,)
Green Top,		Pedee.

Scotland County.

Arbela,	Laura,	Prospect Grove,
Bible Grove,	Memphis,	Sand Hill.
Billupsville,	Middle Fables,	Unity,
Etna,	Pleasant Retreat,	Wyaconda.

Scott County.

Benton, (c. h.,)	Cypress,	Pleasant Plains,
Commerce,	Kelso,	Price's Landing.

Seneca County.

Looniesville.

Shannon County.

Eminence, (c. h.,)	Pine Hill,	Richmond Hill,
Henpeck,		Willow Spring.

Shelby County.

Bethel,	Hawkins' Store,	Shelbyville,
Clarence,	Lakeland,	Tiger Fork,
Cherry Box,	Lakeman,	Walkersville,
Hager's Grove,	*Oakdale*, (c. h.,)	West Springfield.
	Shelbina,	

St. Charles County.

Augusta,	Missouriton,	Portage Des Sioux,
Cottleville,	Naylor's Store,	*Saint Charles*, (c. h.,)
Femme Osage,	New Melle,	Saint Peters,
Flint Hill,	Oakwood,	Snow Hill,
Hamburg,	O'Fallon,	Wellsburgh,
Hickory Grove,		Wentyville.

St. Francois County.

Big River Mills,	*Farmington*, (c. h.,)	Iron Mountain,
Blackwell's Station,	French Village,	Locust Bridge,
Blairsville,	Hazle Run Mills,	Silver Spring,
Cross Roads,		Stono.

St. Genevieve County.

Avon,	Plank Road,	*St. Genevieve*, (c. h.,)
New Bremen,	Punjaub,	Saint Marys.

St. Louis County.

Allenton,	Des Peres,	Kirkwood,
Barrett's Station.	Ellisville,	Manchester,
Bellemont.	Fee Fee,	Mattese,
Bridgeton,	Fenton,	Melrose,
Bonhomme,	Florisant,	Normandy,
Carondelet,	Fox Creek,	Rock Hill,
Central,	Glencoe,	*Saint Louis*, (c. h.,)
Cheltenham,	Jefferson Barracks,	Sappington,
Creve Cœur,		Waltonham.

Stoddard County.

Bloomfield,	Indian Ford,	Piketon.
	Lakeville,	

Stone County.

Curran,	*Galena*, (c. h.,)	Robertson's Mill.

Sullivan County.

Bairdstown,	Milan,	Scottsville,
Green Castle,	Owasco,	Valparaiso,
Jackson Corners,	Pennville,	West Locust,
Kiddville,		Wintersville.

Taney County.

Arno,	Big Beaver,	*Forsyth*, (c. h.,)
Bald Knob,	Bull Mills,	Swan Creek,
Bauff,		Taney City.

Texas County.

Blooming Rose,	Hickory Springs,	Plato,
Casto Valley,	*Houston*, (c. h.,)	Plum Valley,
Cedar Bluff,	Jack's Fork,	Roubidoux,
Ellsworth,	Licking,	Stanford.
	Montauk,	

Vernon County.

Deerfield,	Hardwood,	Montevallo,
Dry Wood,		Nevada.

Warren County.

Brandt's Rock Spring,	Loutre Island,	Pitts,
Camp Branch,	Marthasville,	*Warrenton*, (c. h.,)
Holstein,	Pinckney,	Wright City.
	Pin Oak,	

Washington County.

Boyer,	Harmony,	Old Mines,
Cadet,	Hopewell Furnace,	*Potosi*, (c. h.,)
Caledonia,	Irondale,	Richwoods,
Fourche a Renault,	Mineral Point,	Rock Spring.

Wayne County.

Brunot,	*Greenville*, (c. h.,)	Otter Creek,
Cold Water,	Greenwood Valley,	Patterson.
	Lowndes,	

Webster County.

Bristol,	Mornington,	St. Luke,
Dallas,	Norma,	St. Mark,
Finley,	Orr,	St. Paul,
Marshfield,	Panther Valley,	Waldo.

Wright County.

Alma,	Hazelwood,	Whetstone,
Astoria,	Mint Spring,	Wolf Creek,
Cave Spring,	Pleasant Valley,	Woodbury,
Hartsville, (c. h.,)	Sacramento,	Wood's Fork.

THE ELECTRIC LIGHT IN PARIS.—The experiments with the electric light, which have now been made for a long time past at the Palais-Royal, Paris, are still continued every evening with increasing success. Lately, instead of two burners fed by divided currents from the magneto-electric machine, one burner, fed by a single current, has been used. It is raised sixteen metres, and illuminates, as with the light of the full moon, the whole square in front of the Palais-Royal, and the two entrances of Rue Saint Honoré. Two hyperbolic reflectors—one above the light, the other below—increase and defuse the light. By certain improvements in the prisms or cylinders of artificial carbon, which are used in the production of the light, M. Curmer is now able to make electric lamps which will burn five or six hours without requiring any attention. The lamp of M. Serrin, placed before the house of Prince Eugene, also burns brilliantly. M. Serrin has succeeded lately in causing his lamp to burn under water almost as well as in the atmosphere. Thus, we may now light the bottoms of rivers, or of the sea, or the bottoms of floating vessels, sunken wrecks, the foundations of piers, and other submarine structures. It is expected that we shall soon be able to apply this method of illumination in our lighthouses, ships, and generally on land in our cities and houses. At the Invalides lately, in the presence of Despretz, Babinet, Foucault, and others, a magneto-electric machine was worked by one of Lenoir's lately-invented gas-engines, of 3-horse power. By this means, a strong electric current was generated, and M. Serrin's lamp gave a very brilliant light, equal to two hundred Carcel burners.—*Lond. Mechanics' Magazine.*

DRAIN-PIPE SLEEPER.—The London *Builder* says, that Mr. Pym, of Laurence, Pountney-hill, has just patented an improved railway sleeper, which he denominates the drain-pipe sleeper, having a perforated metal trough under it as laid down. A good idea.

WATER-WORKS OF AMERICA.

SAN FRANCISCO, CAL.

The Spring Valley Water-Works Company were incorporated in the month of June, 1858, in pursuance of an act of the Legislature, approved April 23, 1858. The capital stock is $3,000,000, divided into 3,000 shares of $1,000 each. *Officers*—President, Wm. H. Tillinghast; Secretary, Edward Mickle; Treasurer, Abel Guy; Chief-Engineer, A. W. Von Schmidt; Trustees, Wm. H. Tillinghast, Henry Carlton, Jr., Robert Roxby, W. B. Johnston, and A. W. Von Schmidt. *Office of the Company*—Southeast corner of Montgomery and Jackson streets.

The company was formed for the purpose of introducing pure water into the city and county of San Francisco, and supplying its inhabitants: The water is collected from various branches of the stream known as the Pillarcitos Creek, in the coast range of mountains, distant from San Francisco about fifteen miles in a southerly direction. This supply is taken at an elevation of 700 feet above the level of the sea, through the main coast range, by means of a tunnel 1,500 feet in length. At the eastern end of the tunnel the waters fall into a reservoir constructed in the bed of San Mateo creek. From this point the water is conducted around the hills into the grand Reservoir (Lake Honda) back of the Mission Dolores, by a flume 18 by 30 inches, with a grade of seven feet to the mile. Two miles of iron pipe are used on this route, where it crosses ravines and low places.

The flume will carry 4,000,000 gallons per 24 hours. The company will have as a reserve in their reservoir at the creek 500,000,000 gallons, which is filled during the winter season and can be drawn from whenever required. "Laguna Honda," the distributing reservoir, is one of the finest natural reservoirs in the world; and when finished will hold 100,000,000 gallons of water. From this reservoir 16-in. iron mains will be laid to the corner of Market and Stockton streets, being about four miles in length. From the 16-inch mains, 12-inch mains take the water into different parts of the city, which are again tapped with smaller mains.

All parts of San Francisco not exceeding 350 feet above the city base will be supplied with water from these works without machinery.

The waters of the Pillarcitos are well known for their purity. They rise in a granitic formation, and have no vegetable impurities in their composition.

In addition to the above supply, the company have immense sources of water south of the Pillarcitos and San Mateo creeks, should it ever be required. They are the Purissima, Tunitas, Lobitas, and San Gregorio creeks. The last stream alone runs daily 12,000,000 gallons. But it will probably be many years before this additional quantity will be required.

The Islais Creek also belongs to this company, and runs 300,000 gallons daily. The waters of this creek are already running through a number of the streets in the southern part of the city. The pipes of the company now laid (July, 1861) from this source amount to five miles. During the present year (1860) twenty miles of pipe will be laid; and in the course of 1862, an additional thirty miles, within the limits of San Francisco—being the property of the Spring Valley Water Works Company.

DIOPTRIC LIGHTS.—Small brilliant dioptric lights are used in all the French ports.

ON A WHEEL FOR LIFTING WATER AND OTHER FLUIDS.

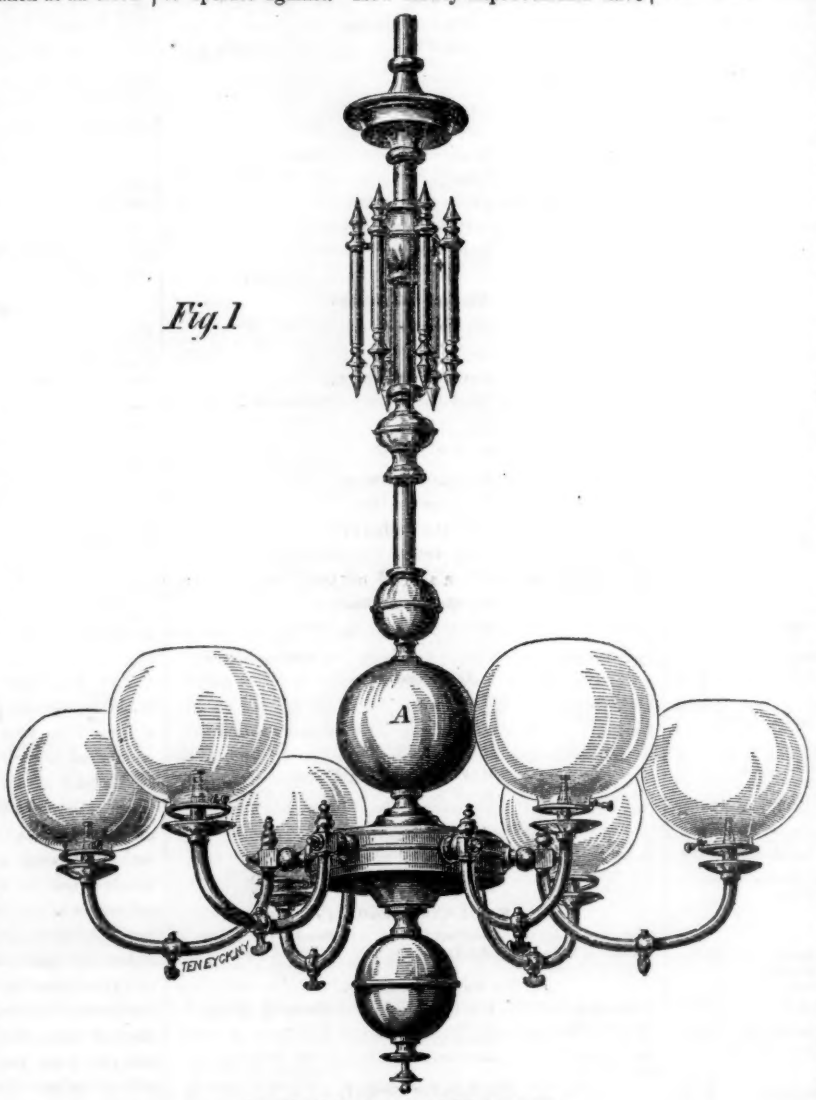
BY MR. HOWBRIDGE.

THE author commenced by lamenting the deficiency of his own early education, and the consequent difficulty he felt in addressing himself, through the medium of a paper, to his brother foremen. The facts he had to place before them, however, were the fruits of his own experience, and of thirty years' close study and attention to the subject he had chosen to attempt illustrating. He would wish those of his auditors who had attended at all to the matter in hand, to look back over the last half century at the methods which had been adopted in the low countries for effecting drainage. There was the old windmill, with its wooden shaft, wooden gearing, and wooden scoop wheel, scarcely powerful enough to raise water a few feet, and sometimes, perhaps when most required, unable to operate at all, either from want of wind, or too much of a "lead" to operate against. How slowly improvements have been made! The first great step in the right direction was taken by Mr. Glynn, then manager of the Butterly Iron Works, by the introduction of steam-power for the purpose of working scoop-wheels. These last had undergone many modifications, for it was long since discovered that they did not accomplish all that might be desired of them. Mr. Howbridge stated, that during the years 1848–49–50, he was very extensively engaged in making scoop-wheels for draining the fens of Cambridgeshire and Lincolnshire, and thus a consideration of the subject was, at it were, forced upon him. Observing that the wheels in use had many practical and grave defects, he had set about devising something better. After many plans had been taken up and put down, many models made and abandoned, he had come to the conclusion that the kind of wheel he should that night endeavor to describe, was among the best that could be used for the purpose of lifting water. This conviction had cost him some thought and labor to arrive at, and he put it forth with a certain degree of confidence. If he were wrong, probably some of his fellow-members would put him right.

The objects to be attained in the construction of steam-driven wheels for lifting water, were undoubtedly the raising of the greatest quantity of water to the greatest height, with the least expenditure of motive power, and the least amount of waste. These disiderata were to be combined with a wheel of small diameter, which would work against a "lead" of water at the discharge, and lift most when the flood was highest. Above all, their simplicity of construction was an indispensable requirement, for there must be little liability to derangement from dirty water or such *debris* as was frequently to be met with in the courses of the fen districts. He trusted that all these points had been properly taken into account in the wheels which, by the aid of diagrams and explanations, he should now try to describe. The author here exhibited a sectional elevation of a bucket wheel he had devised, with hollow arms, made of sheet iron. Through these arms, which are in fact pipes, the water raised by the curved buckets during the revolution of the wheel would be discharged into the hollow shaft or axis upon which the wheel turned. Each arm was fitted with a self-acting gravitating valve, which would open and admit the water raised to the hollow shaft or axis, and close against its egress through the arms on the opposite side of the wheel. The water thus raised would flow through the central axis, whence it might be diverted to any channel. Mr. Howbridge remarked that the scoop-wheel could not be made to throw water more than one-third its diameter, whilst the wheel he recommended would easily do so to the extent of one-half, thus demonstrating the fact that a smaller wheel would do the same amount of duty.

From calculations carefully made, he had satisfied himself that a twenty-feet wheel, on his plan, with eighteen buckets, each two feet wide and two feet deep, and making eight and a half revolutions per minute, would lift twenty-six tons of water or other fluid per minute. This would require sixteen-horse power, or, adding one-fourth to that for overcoming the inertia of the wheel, say twenty-horse power. The writer of the paper went further into detail, with a view to proving the superiority of the hollow-armed wheel over all others yet known, and urged that it was well adapted for drainage, irrigation, and sewage purposes.—*Newton's Lond. Jour.*

Fig. 1



GWYNNE'S GAS CARBONIZER.

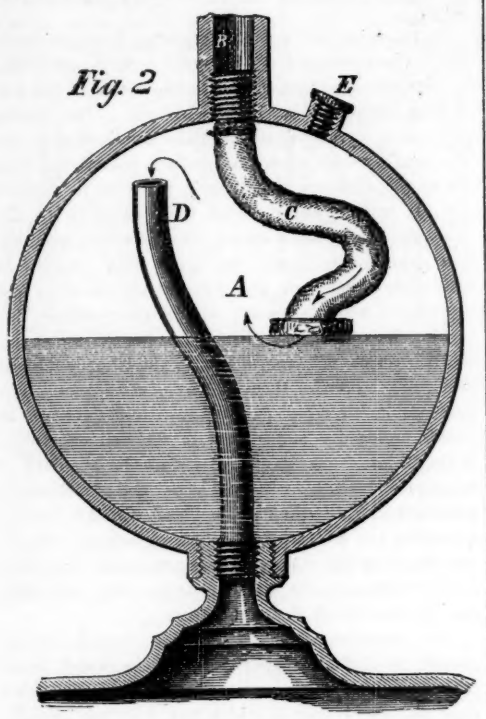
GWYNNE'S GAS CARBONIZER.

It is well known that the brilliancy of illuminating gas is rendered more intense by passing it through some easily volatilized hydrocarbon, such as coal-tar, naphtha, and many other substances of a similar nature. The principal difficulty in the way of the general adoption of a carbonizing apparatus, has been the liability of the vapor of the hydrocarbon employed to condense in the pipes and fixtures, thus causing a great amount of trouble to effect its removal. The apparatus of Mr. Gwynne, of which we present two illustrations, is not open to the same objections; the vessel containing the hydrocarbon being attached to the gas-fixture, and not at or near the meter, as is generally the case, thus presenting a great advantage over any other method.

A hollow globe, A, Figs. 1 and 2, is introduced into the gas-fixture in the position shown in Fig. 1. This globe is partly filled with naphtha, benzole, or other suitable liquid hydrocarbon, and the illuminating gas is

brought into it at the top through the pipe, B. The gas passes down through the hollow wick, C, into the liquid, and rising charged with vapor, passes out through the pipe, D, to the burner. The lower end of the wick, C, is supported by a float resting upon the liquid, and thus follows the surface down as the liquid is consumed. The pipe, D, rises above the level of the filling tube, to prevent all danger of its ever receiving any liquid.

Fig. 2



The company which manufactures this carbonizer guarantees a saving by its use of 33 per cent. in the gas bills, and the production of a better light than that of the city gas The inventor says that an article of naphtha is now which obtained is free from any objectionable odor.

PASCAL IRON WORKS.—The extensive manufactory of Morris, Tasker & Co., of Philadelphia, is at present giving employment to between two and three hundred hands. This number will be shortly increased, as orders from various portions of the country are coming in very briskly. The firm are now making up work for parties who have contracts with the Government. Within the past few years they have turned their attention to the manufacture of galvanized iron pipes, which are claimed to be cheaper than lead pipes, and a great deal stronger. By many it is thought that if these pipes were substituted for those in use at present a beneficial result would be experienced. Within a few weeks past, several cases in this city have come under the notice of physicians where persons have been poisoned from using water which has been allowed to remain over night in the the pipes attached to hydrants. If galvanized iron pipes were used, it would not only effect a great pecuniary saving, but the health of the people would not suffer from the injurious matter which collects in leaden pipes. The excitement occasioned some time since by the discovery of the mineral oil in the western portion of Pennsylvania has caused a great demand for artesian well pipes and tubes. These are made either with the flush or locket joint, of any diameter, length, or weight that may be required. The flush joint artesian well tubes are made under the patent of J. N. Bolles, and are described as "the mode of rendering cylinder tubes flush upon a line on their extension surfaces for artesian or other purposes, &c., patented June 19, 1855." This patent is owned by Messrs. Morris, Tasker & Co., who grant no licenses to other parties, or for the use of any manufacture but their own. They also prepare the tools for boring and drilling the wells. A variety of light machinists' tools, together with a variety of maleable iron-work, is constantly being made up by that firm, who have favored us with a beautiful volume containing an illustrated catalogue and price list of their several manufactures, which can be seen in our library, to which it is quite an addition.

A NEW AMERICAN GAS-COAL.

It has been lately discovered that a coal mine, situated on Cape Breton Island, contained coal of a superior quality for gas making, surpassing every American coal in this respect, with but one or two exceptions. The mine is situated upon Cow Bay, now called Manhattan Bay, in honor of the Manhattan Gas Co. of this city, who have just contracted for 20,000 tons of the coal. This mine seems to have been worked at some former period, probably before the country fell into the possession of the English. It is now under the supervision of Marshal Bourinot and Robert Belloni. An analysis of the coal, by Dr. Torrey, gave the following result:

Water	5.00
Volatile combustible matter	33.80
Fixed carbon	55.80
Ash, (dark red)	5.40
	100.00

One ton of 2,240 pounds produces 9,500 cubic feet of gas and 40 bushels of coke. Weight of coke, 1,416 pounds. This coke is clear, of good size, and free from breeze. It burns well, and makes a hard clinker. When the production of gas is confined to 9,500 feet, the analysis is as follows:

Olefiant gas	5.25
Hydro-carbon vapors	.75
Carbonic oxide	9.25

Tested by the photometer, five cubic feet of this gas is equal to 17.98 standard sperm candles, burning at the rate of 120 grains per hour. After standing over night, the gas had an illuminating power of 17.53 candles.

THE LIME LIGHT AT THE SOUTH FORELAND LIGHT HOUSE.—On a headland some 3½ miles to the eastward of Dover, are situate two light-houses, well known as the Upper and Lower South Foreland Light-houses. The Upper Light-house, which is fitted with a Fresnel apparatus, was recently the scene of Professor Holmes's experiments with the electric light. This light was removed some eighteen months ago, and has since found a place in the light-house at Dungeness, in an apparatus specially prepared for its reception. The Upper Light-house at the South Foreland has now been selected by the Trinity Board for the exhibition of the lime light, for which a special contract has been entered into by the Universal Lime Light Company. This light was placed in the lighthouse on the 26th of last month; and, having continued to burn brilliantly, as we are informed, and steadily ever since its erection, it may now be held to call for some special notice. For the benefit of those not informed on the subject, we will give a short description of what the lime light is. The light is obtained from the ignition of a piece of lime by submitting it to the intense heat evolved by the compound flame of hydrogen and oxygen gases, in the proportions in which they form water. The lime does not burn, but simply becomes brilliantly illuminated, without undergoing any chemical change. This light, therefore, is independent of the atmospheric air, and does not deteriorate it. The light produced is the most intense known, with the exception of the electric light, from which it differs, however, in some important particulars. It is steady and continuous, and its volume may be increased at pleasure. Drummond was the first who applied the lime light to purposes of practical utility; and by his experiments it was shown that its range was practically unlimited, for he connected the shores of Wales and Ireland by the light at Holyhead, a distance of sixty-four miles; and afterwards obtained a like result at the summits of Ben Lomond and Knock Layd, a distance of ninety-five miles. His light, however, wanted these two special properties: volume, without which no light is adapted to the means at present possessed for its distribution; and, secondly, continuity, which he could not command. For these reasons it was condemned by Stevenson as unsuited to light-house purposes. In fact, with the appliances then obtainable, he could come to no other conclusion, the duration of the light being under no control. Both these difficulties, we understand, have been overcome by the ingenuity of those who have followed in the wake of Drummond, for the volume can be readily increased so as to meet every practical necessity; whilst the complete control over its continuity, and the facility with which it can be permanently maintained, have been fairly proved by practical experiments.—*London Builder.*

WATER-WORKS OF GREAT BRITAIN.

ENGLAND.

KING'S LYNN.—The diameter of the main pipe from the works into the town is 14in. bore, and the next 12in., and then 10in., 6in., 5in., and 4in. They are all tested to stand a pressure of water of 300 feet head. They used to have only an 8 inch main into the town, but found a great advantage to the engines working by having a larger main pipe. They have three steam-engines—one of 10 horse power, one of 12 horse, and one of 45 horse power. They have about 15 miles of cast-iron main pipes; the service pipes to the buildings are of lead, and the owner of the building has to be at the expense of the lead pipes. I enclose you a scale of our charges by meter, and also of what we charge to private houses. JOSEPH WOOTTON, Resident Engineer.

LEAMINGTON.—The local board have entered into a contract with the owner of a mill in the town (for a term of years,) to pump water from the Leam (filtered) into the reservoirs belonging to the board, after which it is distributed by means of cast-iron pipes through the whole of the town. The pumping is done partly by water and partly by steam-power. The amount paid to the contractor is as follows, viz.: for the first 200,000 gallons per day, at the rate of 2 5-16d. for each 1,000 gallons; for any additional supply, up to 100,000 gallons, at the rate of 1¼d. for each 1,000 gallons; for any additional supply beyond 300,000 gallons, up to an additional 100,000 gallons, at the rate of 1½d., and for any additional supply beyond 400,000 gallons at the rate of 1 1-8d. per 1,000 gallons.

ANTHONY MORGAN, C. E., Surveyor to the Leamington Local Board of Health.

LIVERPOOL CORPORATION WATER-WORKS.—*Chorley District.*—The following will be the scale of charges for the supply of water:

Dwelling-Houses.

Rent per Ann.	Water Ch'ge per quarter.	Rent per Ann.	Water Ch'ge per quarter.
	£ s. d.		£ s. d.
Not exceeding £4	0 1 6	Not exceeding £26	0 6 6
" " 6	0 2 0	" " 27	0 6 9
" " 8	0 2 6	" " 28	0 7 0
" " 10	0 3 0	" " 29	0 7 3
" " 12	0 3 3	" " 30	0 7 6
" " 14	0 3 6	" " 35	0 8 0
" " 15	0 3 9	" " 40	0 9 0
" " 16	0 4 0	" " 45	0 9 9
" " 17	0 4 3	" " 50	0 10 6
" " 18	0 4 6	" " 55	0 11 3
" " 19	0 4 9	" " 60	0 12 0
" " 20	0 5 0	" " 65	0 12 6
" " 21	0 5 3	" " 70	0 13 0
" " 22	0 5 6	" " 80	0 14 6
" " 23	0 5 9	" " 90	0 15 9
" " 24	0 6 0	" " 100	0 16 9
" " 25	0 6 3	" " 110	0 17 9

Shops, Offices, &c.—A shop or office, connected with a dwelling-house, will be charged 3d. in the pound on the rental, after deducting the fair value of the house. No shop will be charged less than 5s. or more than 20s. per annum. A shop or office, not connected with a dwelling-house, will be charged 4d. per pound on the rental, and not less than 8s. per annum.

Hotels, Inns, &c., will be supplied on the following terms, or by special agreement: Public houses will be charged 30s. in addition to the charge for private houses. Beer houses will be charged 10s. in addition to the charge for houses. For brewing, 6d. per load for every load of malt used, or by meter, as may be agreed on. Horses, 5s. per annum each. Washing carriages, four wheeled, 7s. 6d., two wheeled 5s. per annum each. Cows, 2s. 6d. per annum each; other animals in proportion. Baths or water-closets—For a house not exceeding £10, 2s. 6d. per annum; above £10, and not exceeding £20, 6s. per annum; above £20, and not exceeding £40, 8s. per annum; above £40, and not exceeding £80, 10s. per annum; above £80, 12s. per annum; for each additional bath or water-closet, 4s. per annum. N. B.—Water will not be supplied to any water-closet unless the apparatus for regulating the quantity to be used shall be constructed to the satisfaction of the engineer to the corporation. Water for manufacturing purposes, or for supplying steam-engines and boilers, 6d. per 1,000 gallons, the supply to be by meter wherever such can be introduced. The rents must be paid quarterly in advance; the quarter days are the 25th March, 24th June, 29th September, and 25th December in each year. Landlords contracting to pay in advance for ten or more houses, whether empty or tenanted, not exceeding the annual value of £10 each,

will be allowed 20 per cent. discount; for five houses and under ten houses, 10 per cent. discount.

Note.—Any person taking water from the corporation works, not having agreed for the same, is liable to a penalty of £10, and persons supplied with water under the provisions of the act, who shall allow others, not being tenants of the corporation, to take water, are liable to a penalty of £5.

Further particulars may be had by applying to the local manager of the corporation, Mr. Richard Trippett, at the water-works office.

By order of the Water Committee.

WM. SHUTTLEWORTH, Town Clerk.

MARGATE.—These works are of recent date, and therefore have the benefit of the latest improvements, particularly the reservoir, which being covered by arches prevents the water vegetating, and also keeps it cool.

GEO. CHEXFIELD, Sec'y.

SALISBURY.—This company has a pair of Woolfe's double cylinder engines, 30 horse power, one used; also, two 14-inch plunger pumps, 12-inch delivery to reservoir 400 yards distant. Supply constant at full pressure during the day from 6 A. M. to 10 P. M. Consume about 380 tons of Welsh coal a year. Pump about 16 hours per day. Works belong to the City Local Board of Health. JOHN C. BOTHAMS, C. E.,

City Surveyor.

ST. HELENS.—The old water-works of 1843 belonged to a company, and in 1851, on establishing the new works, the old were leased to the commissioners for 5,000 years at a rental of £610 per annum. John McManus, surveyor to Improvement Commissioners, Kent—a district southwest of London, comprising Deptford, Greenwich, Charlton, Woolwich, Plumstead, Lee, Lewisham, Camberwell, and Rothewithe. The engineer says: In common with all London water-works, the engines are the principal feature. The engines at the Kent water-works are seven in number, from 25 to 200 horse power (aggregate 750 horse power); the water is supplied either direct from the wells, or from the summit reservoir; in the latter case, the water after storing is always filtered previous to delivery. W. R. MORRIS, Engineer.

SOUTHAMPTON.—Supply all public buildings, such as schools, charities, Infirmary, chapels, &c., free of charge. All streets are watered, and courts, alleys, and sewers flushed free. Water is supplied by meter for trade purposes at 1s. per thousand gallons.

G. MANWARING, Engineer.

WHITEHAVEN.—The supply of water is continuous, and the purest of any on record. Meters are used only for trade purposes. GEO. BURRELL, Engineer.

JOHN MUSGRAVE, Sec'y.

SCOTLAND.

AYR.—Public works in this town taking water by measurement or otherwise, for engines, &c., to pay according to rates, and under regulations to be found at the company's office, No. 2 Kirk Port. Public works taking water for drinking, 6d. for each person. Foundries and smiths' shops, 1s. per man, unless the water is used for supplying engines. Grocers, drapers, and silk mercers' shops, under a rental of £10, to be charged 3s.; ditto rental, £10 to £20, 4s.; ditto, £20 and upwards, 5s. Bakers to pay 5s., and the same sum in addition for each man and boy employed. Charge for horses, each 4s.; cows, 2s.; four-wheel carriages, 8s.; two-wheel carriages, 5s.; livery stables, 1s. 6d. each stall;—when such charges are paid, the rent of the stable, &c., will be deducted from the rent of the premises. Masons to pay for buildings in the course of erection, 1s. per rood of mason work; plasterers one-half of the sum paid by the mason. Counting-houses, writing-offices, warehouses, inns, public-houses, wine and spirit cellars, water-closets, except in private houses, and all others not enumerated, to be supplied by special contract. Persons having shops, work-houses, &c., contiguous to their dwelling-houses, will require to contract for each separately. The landlord of a tenement provided with a water pipe, contracting with the company for all the dwellings in it having rentals under £4, will be allowed a discount of 10 per cent. from the preceding rates. The proprietors of houses that are let, furnished, for a period of less than six months, shall be held liable to the company for the water rates; and in no case when the water is used will a less sum than three months' rates be charged. If the stated charge is incorrect, written objections must be lodged at the company's office within 14 days after this notice is served. According to the practice of all other water companies, the pipe from the main in the street is provided by the parties requiring water. In tenements occupied by several families, the most convenient plan is to carry a branch into each dwelling; and as by this plan the pipes and stopcocks are most secure, and the water not liable to be stolen, the company give it a decided preference. In particular instances, however, they will admit of the pipe being carried to the back of the building—the stopcock being enclosed in a secure box, to which each Tenant has access by means of a key. Information respecting the regulations to be observed in laying pipes, will be given on application to the company's superintendent. Heavy penalties will be incurred by persons laying pipes without the company's knowledge; and also by persons giving or receiving the water fraudulently. Keys given out by the company, for the use of persons contracting for water, remain the property of the company, and must be returned at the termination of the contract, when the sum advanced for their use will be repaid, unless the keys are damaged. Any person failing to restore such key, at the expiry of the contract, is liable in a penalty; and such as purchase the keys of the company from persons failing to implement the above-mentioned condition of contract, will be held as resetters of stolen property. In all cases where keys are given out to a well common to the tenants of the same premises, or introduced to flats of houses, the contract not to be binding on the company to supply water beyond fourteen days from the date of the contract (except where the whole tenants of such premises have contracted and paid for the water, or the landlord for them); the company binding themselves to return to such tenants all moneys exceeding the proportionate amount due for the time the company's water has been used, in cases where the supply has been cut off. The community are hereby warned against all unnecessary waste of water, or giving water to others, as by doing so they subject themselves to heavy fines; and all persons omitted from the collector's survey, who shall use the water without intimation at the company's office, are liable in a penalty.

CAMPBELLTOWN.—These works were executed at the sole expense of the Duke of Argyle, who gave to the magistrates the right of charging the inhabitants for the use of the water, for 99 years,—at a rate not to exceed 7s. 6d. per crane,* while the public wells are to be supplied free. ANGUS TAYLOR, Supt.

* How much is a crane? ED.

ON COMBUSTION IN RAREFIED AIR.

BY DR. EDWARD FRANKLAND, F. R. S.

In the autumn of 1859, whilst accompanying Dr. Tyndall to the summit of Mont Blanc, I undertook, at his request, some experiments on the effect of atmospheric pressure upon the amount of combustible matter consumed by a common candle. I found that, taking the average of five experiments, a stearine candle diminished in weight 9.4 grammes when burnt for an hour at Chamounix; whilst its ignition for the same length of time on the summit of Mont Blanc, perfectly protected from currents of air, reduced its weight to the extent of 9.2 grammes.

This close approximation to the former number, under such a widely different atmospheric pressure, goes far to prove that the rate of combustion is entirely independent of the density of the atmosphere.

It is impossible to repeat these determinations in a satisfactory manner with artificially rarefied atmospheres, owing to the heating of the apparatus which surrounds the candle, and the consequent guttering and unequal combustion of the latter; but an experiment in which a sperm candle was burnt first in air under a pressure of 28.7 inches of mercury, and then in air at 9 inches pressure, other conditions being as similar as possible in the two experiments, the consumption of sperm was found to be—

At pressure of 28.7 inches 7.85 grms. of sperm per hour.
" 9.0 " 9.10 " " "

Thus confirming, for higher degrees of rarefaction, the result previously obtained.

In burning the candles upon the summit of Mont Blanc, I was much struck by the comparatively small amount of light which they emitted. The lower and blue portion of the flame, which under ordinary circumstances scarcely rises to within a quarter of an inch of the apex of the wick, now extended to the height of ⅛th of an inch above the cotton, thus greatly reducing the size of the luminous portion of the flame.

On returning to England, I repeated the experiments under circumstances which enabled me to ascertain, by photometrical measurements, the extent of this loss of illuminating effect in rarefied air. The results prove that a great reduction in the illuminating power of a candle ensues when the candle is transferred from air at the ordinary atmospheric pressure to rarefied air. It was, however, found that, owing to the circumstances mentioned above, no satisfactory quantitative experiments could be made with candles in artificially rarefied air, and recourse was therefore had to coal-gas, which, although also liable to certain disturbing influences, yet yielded results, during an extensive series of experiments, exhibiting sufficient uniformity to render them worthy of confidence. The gas was in all cases passed through a governor to secure uniformity of pressure in the delivery tubes. A single jet of gas was employed as the standard of comparison, and this was fixed at one end of a Bunsen's photometer, whilst the flame to be submitted to various pressures, and which I will call the experimental flame, was placed at the other. The experimental flame was made to burn a uniform amount of gas, viz., 0.65 cubic foot per hour in all the experiments.

The products of combustion were completely removed, so that the experimental flame, which burnt with perfect steadiness, was always surrounded with pure air, the supply of which was, however, so regulated as to secure a maximum of illuminating effect in each observation.

In all the following series of experiments, the illuminating power given under each pressure is the average of twenty observations, which accord with each other very closely. In each series, the maximum illuminating effect, that is the light given by the experimental flame when burning under the full atmospheric pressure, is assumed to be 100. The following is a summary of the results:

First Series.		Second Series.	
Pressure of air in inches of mercury.	Illuminating power of experimental flame.	Pressure of air in inches of mercury.	Illuminating power of experimental flame.
29.9	100.0	30.2	100.0
24.9	75.0	28.2	91.4
19.9	52.9	26.2	80.6
14.6	20.2	24.2	73.0
9.6	5.4	22.2	61.4
6.6	.9	20.2	47.8
		18.2	37.4
		16.2	29.4
		14.2	19.8
		12.2	12.5
		10.2	3.6

These numbers indicate that even the natural oscillations of atmospheric pressure must produce a considerable variation in the amount of light emitted by gas flames, and it was therefore important to determine, by a special series of observations, this variation in luminosity within, or nearly within, the usual fluctuations of the barometrical column. In order to attain greater delicacy in the pressure readings in these experiments, a water-gauge was used, but its indications are translated into inches of mercury in the following tabulated results, each of which represents, as before, the average of twenty observations.

Third Series.

Pressure of air in inches of mercury.	Illuminating power of experimental flame.
30.2	100.0
29.2	95.0
28.2	89.7
27.2	84.4

It is thus evident that the combustion of an amount of gas which would give a light equal to 100 candles when the barometer stands at 31 ins., would give a light equal to only 84.4 candles if the barometer fell to 28 ins.

An inspection of all the above results shows that the rarefaction of air, from atmospheric pressure downwards, produces a uniformly diminishing illuminating power until the pressure is reduced to about 14 ins. of

mercury, below which the diminution of light proceeds at a less rapid rate. The above determinations give approximately 5.1 per cent. as the mean reduction of light for each diminution of 1 in. of mercurial pressure down to 14 ins. The following table exhibits the actually observed light, compared with that calculated from this constant.

First Series.			Second Series.		
Pressure.	Illuminating power.		Pressure.	Illuminating power.	
	Observed	Calculated.		Observed	Calculated.
29.9	100.0	100.0	30.2	100.0	100.0
24.9	75.0	74.5	28.2	91.4	89.8
19.9	52.9	49.0	26.2	80.6	79.6
14.6	20.2	22.0	24.2	73.0	69.4
9.6	5.4	— 3.5	22.2	61.4	59.2
6.6	.9	—18.8	20.2	47.8	49.0
			18.2	37.4	38.8
Third Series.			16.2	29.4	28.6
			14.2	19.8	18.4
30.2	100.0	100.0	12.2	12.5	8.2
29.2	95.0	94.9	10.2	3.6	— 2.0
28.2	89.7	89.8			
27.2	84.4	84.7			

I am now extending this inquiry to pressures exceeding that of the atmosphere, and hope soon to lay before the Society the detailed results of the whole series, together with some observations on the causes of this variation of luminosity.—*Proceedings of the Royal Society.*

SEWER DEODORIZATION BY CHARCOAL FILTERS.

On the 14th of June last, Dr. Stenhouse read before the Society of Arts in London, an interesting paper on the deodorizing power of charcoal, in which he takes still stronger grounds in favor of his theory, than in any other paper on the subject. We find the following condensed account in the London *Builder:*

Towards the close of 1853, my attention was first directed to the deodorizing and disinfecting properties of charcoal; and I was not long in discovering that the views which had been previously entertained regarding the action of charcoal were exceedingly erroneous; for, instead of acting as an antiseptic, and thereby retarding the decay of putrefying substances with which it was in contact, as had been previously supposed, its action was the very reverse of this. Charcoal, therefore, from the considerable amount of condensed oxygen contained within its pores, amounting to between nine and ten volumes [and which, it might have been added, appears to be continually renewed of itself, unless the pores be allowed to be filled with water,—or the charcoal, in other words, to become wet], not only absorbs, but rapidly oxidizes the effluvia and miasmata emitted by decaying substances, and resolves them into the simplest combinations they are capable of forming.

All porous substances, such as platinum black, pumice stone, &c., possess the power of condensing gas within their pores.

The charcoal air-filter consists of a layer of charcoal in coarse powder; varying in size, according to circumstances, between a small bean and a filbert. The charcoal is placed between two sheets of wire gauze fixed in a frame, and can be readily applied to buildings, to ships, to the air-shafts of sewers, to water-closets, to respirators, and various other purposes. All the impurities in the air are absorbed by the charcoal; so that a current of pure air alone passes through the filter; and in this way pure air may be obtained from exceedingly impure sources. It is plain that perforated zinc, or a framework of coarse wire filled with larger pieces, and a greater thickness of charcoal, may be also employed, whenever the amount of effluvia evolved is very considerable.

Before the close of the year 1854, air-filters or charcoal ventilators were fitted up, both at the Mansion House and Guildhall. They are each of them several feet in diameter, the layer of charcoal being about 1½ inch in thickness. Although six years have elapsed the charcoal has never required to be renewed, owing to its oxidating power being practically unlimited. Air-filters were soon afterwards largely employed in private houses, in connection with drains and water-closets particularly; and they were also very successfully applied to the construction of respirators, many thousands of which have ever since been annually manufactured.

Mr. Rawlinson, during the last four years, has applied charcoal air-filters to the ventilation of sewers on a large scale, at West Ham, near London; at Swansea, Worksop, and Buxton, the entire towns; at Brighton, partially; at Bowood, the seat of Lord Lansdowne; and at various other places.

In 1858, Dr. Letheby strongly recommended the employment of charcoal air-filters, as infinitely the cheapest and most effective of all the plans which had been proposed. About a year ago, therefore, under Dr. Letheby's directions, Mr. Haywood, the engineer to the City Commissioners of Sewers, commenced applying the charcoal filters to the ventilation of the sewers in Shoreditch, and to many of the adjoining streets, which were well known to suffer more from the sewerage exhalations than almost any of the other districts in London. The results have been perfectly satisfactory, as the sewer gases are as effectually destroyed by being subjected to a species of low combustion, as if they had been passed through a red-hot furnace. In this process the charcoal is not acted upon by the gases, but acts upon them, as before stated, causing them to combine with condensed oxygen. The efficiency of the charcoal appears never to diminish, if it is kept dry and its pores are not choked up by dust.

The expense of applying charcoal to the disinfection of the sewers is by no means considerable, as the first outlay is all that is required. The only precautions to be observed are, that while the filters shall be sheltered from rain and moisture, free access shall be given to the air.

In conclusion I may state, that for the last six years I have strongly recommended that charcoal air-filters should be applied to all house-drains, sinks, and water-closets.

Every water-closet, in my opinion, ought to be furnished with a subsidiary pipe branching off from the main pipe, a little below the valve of the closet. This subsidiary pipe should be carried a few feet above the seat of the closet; and its extremity,—which should be open, with the exception of a few wires stretched across it, merely to prevent the charcoal falling into it,—should terminate in a charcoal filter 6 or 8 inches thick, into which it should penetrate to the depth of 2 or 3 inches, so as, in fact, to be enclosed by a good body of charcoal. Under such an arrangement as this, no foul gases can penetrate into the closet.

From the preceding statements it is plain, that the oxygen contained in the air of the atmosphere is by far the cheapest and most effective deodorizing and disinfecting agent with which we are acquainted, and that the usefulness of the charcoal air-filter consists in its affording a safe and advantageous means of applying atmospheric air to disinfecting purposes.

I think it but justice to myself to state that I have no pecuniary interest in the charcoal air-filter. Though strongly urged to do so, I refrained from securing it by patent, on the ground that inventions for the prevention of disease and death ought to be sold at the lowest possible price; and should not, therefore, be encumbered with the expense and restrictions attendant upon patent rights.

Dr. Letheby, Mr. Haywood, and Mr. Rawlinson have all recently expressed to Dr. Stenhouse their continued confidence in the deodorizing powers of charcoal filters.

A Human "Register" in the Croton Office.—The Croton Aqueduct Board appointed, when it commenced business many years ago, what it called a "Register," in the shape and person of an old and esteemed friend Revo C. Hance, Esq., who now is—and may he long continue to be—the faithful executive of the Registry branch of that mammoth Department. Our object in alluding to this is to inform the Croton Board that Mr. Hance is not the *Register* (the book in which a register or record is kept; as a parish *register*, or a *list*, as of seamen, or the customers of the Croton Board,) but a *Registrar* (an officer who has the keeping of the register, or the public records). This ridiculous title has been imposed long enough upon Mr. Hance, and we are not sure an action would not lie against the Commissioners for the misnomer. They might as well style Mr. Craven the Chief Engine, or Mr. Tappan a Commission of the Board. Do let it be altered, for the sake of our mother English.

Manchester, N. H.—The growth of the city of Manchester in the past twenty years is unsurpassed by any other place in New England, except Lowell, Mass. In 1838 the population within the limits of the city proper was about fifty persons, and at the present time it is estimated at 22,000, showing an increase in twenty-three years of 21,950. The city was incorporated in 1846. It contains 16 churches of different denominations, a city library, with 7,700 volumes, free to all, and 45 schools, employing 50 teachers, at a cost of $20,000 per annum. Manchester is on the great northern route from Boston to the White Mountains, and to Montpeliar, Burlington, Ogdensburgh and Montreal, and is 58 miles from Boston. The following are the principal manufacturing establishments in Manchester, with the manner of lighting, heating, and running them:

Corporation.	*Light.*	*Heat.*	*Diam. Water Wheels.*
1. Amoskeag Man'fg Co...	Gas.	Steam.	4 Breast, 19 ft., 10 Turbine, 75 in.
2. Stark Mills... ...	Gas & Oil.	Steam.	5 Breast, 19 ft., 5 Turbine, 76 in.
3. Manchester Print W'ks.	Gas.	Steam.	3 Turbine, 8 ft., 2 Turbine, 48 and 68 in.
4. Langdon Mills.....	Gas.	Steam.	1 Turbine, 68 in.
5. Amoskeag Duck & Bg. Co	Gas.	Steam.	1 Turbine, 4 ft.
6. Blodgett Edge-Tool M'fg Co	Gas.	Stoves.	1 Turbine, 4 ft.
7. Manchester Gas-Lt. Co.	Gas.	Steam.	.....
8. Amoskeag Paper Mill..	Gas.	Steam.	1 Turbine, 68 in. 1 Turbine, 8 ft.
9. Manchester Locomotive Works.	Gas.	Steam.	1 steam-engine, 60 horse power.
10. Manchester Iron W'ks.	Oil.	Stoves.	.....

From this it would appear that the Manchester Iron Works are a fossil remains of the century before the last To light with oil and heat by stoves is a stretch of antiquity rarely met with in the present age. However, as we are not stockholders, we have no particular right to complain; although we may be permitted to suggest that a missionary might be well employed by the Gas-Light Company in this field of heathen darkness.

The Land and Water Power Company has charge of the building of new mills, the renting of shops and power, and the selling of land. It has also the direction of the extensive range of shops north of the cotton mills occupied by private enterprise. In this connection it is improper to state that not more than one-half of the water-power of Manchester has yet been brought into requisition, and that a project will ere long be developed, which will greatly increase the population of the city and the extent of its manufactures.

The Gas-Light Company made last year 20,000,000 c. f. of gas, 4,000 bush. bydrate of lime, and $2,000 worth of coke, 3,000 tons of coal. It is well managed and popular. J. T. P. Hunt, Esq., is the superintendent, or, as they say in New England, the agent.

In addition to the above, a large amount of private enterprise is in successful operation—such as:

Darling & Varney's brass and copper foundry. J. Q. A. Sargent's steam and gas-pipe works. J. B. Chase, tanner and currier, and dealer in leather. A. C. Wallace, manufacturer of doors, blinds, sash and window shutters; also of Wyckoff's patent water pipe and tubing, packing boxes, trunk woods, &c. Hall, Perkins & Co., flouring mill. J. M. & S. F. Stanton, manufacturers of Stanton's improved Turbine Water Wheel, and all kinds of mill machinery. J. Colbath & Co., steam and gas-pipe works J. B. Bradley, leather belting and fire-engine hose. James Baldwin, bobbins and shuttles. Benja. S. Stokes, all kinds of files. D. F. Smith, cotton and worsted fliers. Bisco & Denny, card clothing of every description. B. H. Chase, leather belting, etc., etc. Gilman Riddle, bobbins and spools. John Cleworth, loom reeds and belt hooks. J. Wilson & Co., gilt moulding and picture frames. J. & J. C. Marshall, paper boxes. Wilkins & Sylvester, serpentine and ornamental carvers. Edwin Branch, saddles, harnesses, and trunks. H. G. Wilson, brushes of all kinds.

Bergen Iron Works.—Mr. R. A. Brick (not Birch, as stated on page 115) is the proprietor of these works, and is doing a deservedly successful business.

A Winter's Supply of Coal.—The Manhattan Gas-Light Company, of this city, has now under cover one hundred and twenty-five thousand tons of gas coal, for their winter's use. At one time they had thirty ships discharging into their sheds.

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LIGHT, HEAT, WATER-SUPPLY AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of LIGHT, and promote thereby the interests of companies and consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, HEATING, and DRAINAGE everywhere.

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ROOMS of the AMERICAN GAS-LIGHT JOURNAL,
No. 39 Nassau st., cor. of Liberty st., opposite the Post-Office.
New York City.

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FOREIGN.

Germany .....B. WESTERMAN & Co., of New York.
Great Britain....TRUBNER & Co., 60 Paternoster Row, London, where single copies may always be found,
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DOMESTIC.

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THE
AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 1ST AND 15TH OF EVERY MONTH.

PROPRIETOR, JOHN B. MURRAY. | EDITOR, C. ELTON BUCK.

FRIDAY, NOVEMBER 1, 1861.

We have published, from time to time, announcements of reductions in the price of gas in various parts of England, and although firm believers in cheap gas, we have often wondered how dividends could be earned at the remarkably low figures which these reductions occasionally reached. Notwithstanding that the price of labor and gas-coal in England is almost nominal when compared with the rates ruling in this country, yet, to satisfy public clamoring, the price went still lower, and the margin of profit grew proportionately less. In addition to the demands of consumers for still further concessions, the London companies, foremost in complying with these demands, had another serious difficulty to contend with in the stringent provisions of the Metropolis Gas Act, which, imposing additional burdens, held them under such subjection as to place them in a most unenviable position. Under the authority of this act, in which the quality of the gas is required to be maintained at a certain standard, the companies supplying the city of London have found it impossible to make gas at the low figure at which it had been furnished prior to the passage of the act, and as was announced on page 115, they have been compelled to raise the price. This action has given rise, as may be supposed, to some discussion, in which violent attacks were made on the companies, and a bitterness of feeling displayed that is not at all surprising.

Notwithstanding the previous reductions, which should have placed the consumers under real obligations to the companies, they were received as a matter of course, and regarded as eminently proper; but when the effect of continued concessions begins to tell on the profits of the companies, and an advance in price becomes indispensable, their consumers are aggrieved, indulge in recriminations, and suggest that *ignis fatuus* to gas consumers—an opposition company—seeming to regard this in the double light of a retribution against their oppressors on the one hand, and a panacea for their wounded feelings on the other.

If the secret history of opposition gas companies should be written, it would furnish a field of study from which many valuable hints might be gleaned. The first mutterings of discontent for some fancied wrong; the secret conclave of leading agitators; the scheme broached to verdant individuals who eagerly grasp at the idea, in the vain hope of—they scarcely know what; the promise of gas at bare cost of production, together with many other delusions, form subjects for reflection. Competition, we are told, is the life of trade. In certain branches of traffic this is true, and under peculiar circumstances, may be so in others, but the experience of gas consumers in those places where opposition companies exist, is by no means unanimous as to any benefit having been conferred by rival corporations, which often result in an amalgamation after an exhausting controversy has crippled the energies of both. When this condition is reached, instead of consumers being bettered, the fruit of the warfare is reaped in a return to, and maintenance of old prices, and sometimes even an advance above all previous charges.

This state of affairs may be adduced as characteristic of the career of many opposition companies, but by no means of all. In some places the grievances of consumers have been real and such as to suggest the formation of a rival company as the only means of relief from positive injustice. In most instances, however, the promotion of competing gas companies has proved to be an injudicious step, entailing additional burdens, instead of remedying evils which in many cases were purely imaginary.

It should be the aim of gas companies to furnish light at a reasonable cost, and to be liberal in their reductions at times when circumstances justify it; yet there are many things to be considered before the final step is taken. Future contingencies should be weighed and the utmost care taken to avoid even the appearance of precipitation, lest some unforeseen occasion should arise, making an increase of price imperative. In such an event as this, consumers would never remember previous concessions, but smarting under the weight of imaginary wrongs, they would give vent to such expressions of disapprobation as are now being uttered against the London companies.

EXPLOSIVENESS OF COAL-OILS.

When kerosene or coal oil-was first introduced to the public as an illuminating agent, its commendable qualities were largely dwelt on. Among other recommendations its freedom from explosiveness was particularly emphasized, and its harmlessness placed in glaring contrast with the well-known dangerous character of burning fluid, which had great popularity among certain classes. When the public had become reconciled to its characteristic odor, its sales largely increased, and the more troublesome and less cleanly fish and lard oils, and the more dangerous burning fluid, were obliged to give place in a great measure to coal-oil, the manufacture and sale of which increased in an enormous ratio. With this increase of consumption, many improvements were made in refining the oil, which is now manufactured in such purity as to be almost entirely free from any objectionable odor. These improvements, of course, led to a still greater demand, and on account of the softness and intensity of the light emitted during its combustion, as well as its cheapness, in some instances it has been preferred even to gas. It having been a matter of public congratulation that an illuminating agent had been introduced, combining so many pleasant qualities, the first accounts of the explosions of coal-oil lamps were received with some degree of incredulity, and even after these reports were verified, it was suspected that fraudulent admixtures of burning fluid and coal-oil had been made, and palmed off upon purchasers by unprincipled vendors. Subsequent examinations, however, have proved that a large proportion of the kerosene oils in the market are, either through the ignorance, or cupidity of some manufacturers, or perhaps both, extremely dangerous.

Practically speaking, coal-oil consists of a mixture of many hydrocarbons, of variable specific gravities, and boiling points ranging all the way from 50° to 600° Fahrenheit. Although the attention of chemists has been for some time directed to investigating the peculiar properties of these bodies, and many have been systematically isolated; yet no regular series of compounds has been pointed out, whose formulæ are always the same; and after all that has been said and written about them, the conclusion arrived at is that which was started from, viz.—that they are mixtures of hydrocarbons, each distillation of which breaks up existing compounds and forms others, which in turn are alike resolved into still other bodies, whose composition is yet a problem to many chemists. The practical manufacturer divides these oils into heavy and light oils, and as the presence of the more volatile of the latter is the occasion of explosiveness, it should be the object of the refiner to so conduct the distillation as to free the product from such a proportion of the light oil as will not stand a thorough test.

In the early stages of the manufacture, cannel coal was almost exclusively used as the oil yielding material, but since the discovery of the oil wells of Pennsylvania and the adjoining States, the petroleum raised from them has in a great measure supplanted the use of coal—some establishments using the natural oil alone. The object of this is readily appreciated. The petroleum being naturally in a liquid state, there is no necessity for a preliminary distillation, as in the case when coal is used, in which event the crude oil must be first produced by exposing the coal to distillation at a low heat, and the resulting product be treated in the same manner as the oil ready formed in the wells. By the use of petroleum, the retorts for the first distillation are dispensed with, and thus a saving is effected in apparatus as well as in time and labor. When petroleum alone is used in the manufacture of kerosene oil, the product contains a much larger proportion of volatile hydrocarbons than when coal is wholly or partially employed, and therefore more precautions are necessary, and greater labor is requisite to effectually get rid of these dangerous substances. Some manufacturers not only neglect to remove these volatile compounds from the oils, but actually purchase the light oils from more conscientious refiners, in order to mix them with heavy oils, to make them burn. This is an exceedingly reprehensible practice, and deserving severe punishment; for the heat generated by the heavy oils in burning vaporizes the volatile portion and renders it liable at any time to explode.

The oils distilled wholly from coal, or those with which but a small proportion of petroleum has been mingled, are much more easily freed from dangerous portions. By a careful refining, and after distillation, steaming, and a large surface of atmospheric exposure, every dangerous compound can be removed, and no fear need be apprehended from oils which are known to be subjected to a rigid and conscientious refining. In purchasing oils, however, nothing should be taken for granted. They should be carefully tested, and their liability to explode fully investigated. The simplest and most satisfactory test of safety is to place the oil in an open dish in a water-bath, and heat it up to 130° to 140° F. If when elevated to this temperature, on applying a match it does not ignite, it may be pronounced very safe. If it ignites but slowly or sluggishly, it is safe. But any oil which lights quickly in an open dish, at temperatures below 130° F. may be considered as dangerous. We have seen oil the vapor of which ignited with a smart puff or explosion at 60° F. on holding a lighted match more than an inch above its surface. This was dangerous in the highest degree, and the vendor of such a compound should be held to strict accountability for any accident occurring from its being burned in lamps.

Dr. ODLING, who was called in as chemical expert to testify before a coroner's jury in case of a recent lamp explosion in England, mentioned that oils of a specific gravity of 0.820 were safe, and fixed the limit of safety at 0.815. We do not place much confidence in the specific gravity test, because heavy and light oils may be mixed in such proportions as to indicate a high specific gravity, and yet contain sufficient light oil to render the whole compound ex-

plosive. We regard the test of applying a lighted match at elevated temperatures, as above mentioned, as the most infallible essay to ascertain the safety of the oil. It is employed in the refineries where the best oil is manufactured, and so far has invariably proved reliable.

The frequent explosions of coal-oil lamps which have recently occurred, have led some persons to believe that all oils of similar origin are equally dangerous. It is not to be wondered at that such a conclusion should have been reached by those who are ignorant of the process of their manufacture. It is, however, grossly erroneous, as oils are made in which the greatest confidence may be felt, and which, by their cleanliness, illuminating power, and perfect safety, are, next to gas, the most popular sources of artificial light. In view of this fact, it is evident that the public need to be apprised of the real cause of danger and of the means of obviating it. Too much stress cannot be laid upon the necessity of exercising a careful scrutiny with regard to the qualities of coal-oil offered for sale. There being no reason why explosions should occur when the oil is burned in ordinary lamps—unless through the ignorance or cupidity of the manufacturer—if proper care be taken to apply the test we have mentioned, no danger whatever need be apprehended. If this measure of safety be insisted on, the dangerous oils will be driven out of the market, and we shall be spared the task of announcing serious accidents, as have already occurred, and which might have been averted had proper measures been adopted.

THE AMERICAN GAS-LIGHT JOURNAL IN THE MEDITERRANEAN.—We had the pleasure of a visit, a few days ago, from Senor RAMIREZ, of the gas-works at Gibraltar, to which place he ordered the JOURNAL to be sent from its commencement. This JOURNAL is now taken at almost every gas-works in almost every country in the world, besides its general circulation here and in Great Britain among those not directly identified with that interest. Advertisers will make a note of this and act accordingly; for it is the determination of the proprietor to place the JOURNAL in the advance, in every department, and as an advertising medium it shall have no superior in this or any other country.

PROGRESS OF THE WATER-GAS.—We are told that the gas-works at La Crosse, Wis., are being altered to adopt the Water-Gas under Sanders' patent, and that a town in Indiana, near Cincinnati, O., is erecting gas-works of the same patent, and what is of much greater importance, that the gas-works of Leeds, England, are being adapted to it under the superintendence of Mr. BROWN, of Philadelphia, one of the proprietors of Sanders' Patent. This looks like work in earnest.

CONTROLING INTEREST IN THE COLDSPRING, N. Y., GAS COMPANY FOR SALE.—An excellent chance for investment is offered to-day in the Coldspring, N. Y., Gas-Works. The capital is $30,000, of which three-fifths may be had at a reasonable price.

The company was organized in Sept., 1859, and the works commenced business March 25, 1860. It is a Rosin Gas-Works. The following will exhibit the increase of business since the start:

	1860.	RECEIPTS.	1861.
January	——		277 12
February	——		166 90
March	——		165 92
April	108 56		150 62
May	87 60		129 52
June	83 22		105 30
July	82 20		145 76
August	121 56		178 62
September	134 88		225 00
October	251 36		——
November	286 20		——
December	260 34		——
The receipts for gas sold from April 1, 1860, to Sept. 30, 1861 (18 months) were, in round figures,		2,900	
For gas tar, &c		100	3,000 00
Disbursements for same time			1,780 30
Nett gain			$1,219 70

being about 4 per cent. upon the capital, which represents a sum largely in excess of the cost of the works. The buildings are new, of brick, with slate roof. The gas-holder is of 12,000 feet capacity; 2 benches, of 3 retorts each. The consumption is steadily increasing, and the opportunity offered we regard as one to attract a capitalist who wishes to realize a large and certain return for his investment. Further particulars may be had by addressing Geo. T. Jarvis, Esq., care of the AMERICAN GAS-LIGHT JOURNAL, No. 39 Nassau street, New York.

DITHRIDGE'S OVAL LAMP-CHIMNEY.

Fig. 1.

Fig. 2.

The above illustration represents an improvement in the shape of chimneys for coal-oil lamps which will be understood and appreciated without even a description. It has long seemed an awkward and unphilosophic arrangement for a flat flame to ascend a round chimney, causing an unequal heating of the air and chimney, and resulting in imperfect combustion, with a superfluity of, or greater tendency to smoke, besides increasing the liability of the glass to crack. By the simplest change in the shape of the chimney all this is obviated. Fig. 2, shows *a*, an oval hub, attached to *b*, a round base; the combination secures an equalized and stronger draft by placing the flame equi-distant in the chimney, which being heated thus equally is less liable to crack from irregular expansion or contraction.

A few specimens of these chimneys are to be seen at our Rooms, where those interested are invited to call. The glass is of the most exquisite quality, texture, and clearness, while its high polish resembles the finest burnished steel. It will puzzle the celebrated Boston, or even English glass factors, to turn out more beautiful ware. Attention is called to Messrs. Dithridge's advertisement in the Coal-Oil columns on the last page, and it may be well to add that piracies upon their invention will be treated with the utmost legal rigor if persisted in after this notice.

PILLAGING THE LONDON BUILDER.—This most excellent paper says, that a copy of the New York *Builder* was sent to it lately with five articles transferred bodily to its columns, without acknowledgment; and "another American art-paper usually takes two or three, acknowledging one, only." We would like very much to know the name of the "other American art-paper," for we would advertise it *gratis*. What would the London *Builder* say, if three or four pages of expensive and laboriously compiled tables were lifted clean out of its sheets and put into the boots of a contemporary without the least sign of a label to designate its origin? or again, to have a valuable editorial re-hashed, turned over, omelette-fashion, and served up at second table by another editor? If the *Builder* has any curiosity for an explanation, he can find it on page 60, Vol. I., and page 381, Vol. II. of this JOURNAL. We copy largely from the *Builder*, but always with credit, pleasure, and benefit. It is without a superior, and with very few equals in any country.

ANSWERS TO CORRESPONDENTS.

S. M., of Pa.—*You enquire the price, size, and length of Belgian clay retorts, requesting us to purchase and forward some to you. We have handed your letter to Messrs. Elliman Brothers, the agents of the Belgian retorts, as it is contrary to our rules to execute orders or receive commissions on the purchase of apparatus advertised in this* JOURNAL.

A. P. J., of N. H.—*The oxide of glucinum, or glucina, was discovered by Vauqvelin, in* 1798. *Wöhler and Bussy discovered the metal in* 1828.

F. J. C., of Conn.—*Bone-black has been used for many years in the purification of some fish oils. By agitation and filtration through layers of this substance, the color of the oils is removed to a great extent, and the empyreumatic odor removed, although the essential odor still remains.*

A. V., of Pa.—*According to Regnault, the formula of brown coal or lignite may be set down as* $C_{33} H_{21} O_{16}$. *This is when the coal is free from bitumen.*

O. J. E., of Ohio.—1. *They can be procured of any of the philosophical instrument dealers in this city.* 2. *You did not continue the ebullition long enough. It should have boiled five to six hours.*

A. J. A., of Ky.—*Croll appears to be the first one who adopted the practice of using the coke red-hot as it is taken from the retorts. By this means a saving of* 10 *per cent. of fuel is effected.*

P. B., of Pa.—*The rapid wear of iron retorts is not only due to the direct action of the gases of the furnace in oxidizing and wearing away the surface, but also to the sulphur contained in the coal combining with the iron, forming sulphuret of iron, which, being readily fused, soon melts away. The formation of graphite in the interior of a retort diminishes the conducting power of the iron, and, in order to fully decompose the coal, a higher degree of heat is necessary than would otherwise be the case, and thus the whole retort is exposed to a more intense heat than would be necessary if no deposit had been formed.*

CORRESPONDENCE.

WOODEN TRAYS FOR GAS PURIFIERS.

New York, October 21, 1861.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

I wish to call the attention of gas companies to the fact that John L. Cheesman has no patent for wooden trays for gas purifiers *cut out of the solid wood*, as he pretends in his advertisement in your paper.

The Patent Office has granted me a patent for the only machine yet devised for making the conically slotted solid wood sieve, which bears date July 23, 1861, and also a patent for the sieve itself, which will be issued in regular course in a short time. I hereby warn all gas-light companies against purchasing conically slotted solid wood sieves manufactured by any-one but myself. I do not wish, however, to be considered as attempting to levy a contribution on gas companies on account of my patents, but will sell the sieves at a very reasonable price.

It is well ascertained by practical use that conical slots cut out of the solid wood are immeasurably superior in durability to wood sieves made of slats morticed into end-pieces, which is an old and abandoned mode of making them, formerly used in England, but which, I understand, is attempted to be revived and foisted upon the public by those who have been endeavoring heretofore to appropriate my inventions.

As a confirmation of the great economy of my wooden trays, I refer to the statement of Mr. Sabbaton, engineer of the Manhattan Gas-Light Company, on page 119 of the AMERICAN GAS-LIGHT JOURNAL for Oct. 15, 1861.

Respectfully yours,

R. G. HUNT, 631 Fourth st.

ALFRED KING'S CUBIC FOOT MEASURE.—Messrs. Down & Merrifield, the well-known gas-meter manufacturers of this city, have the original cubic-foot measure made and used by Mr. Alfred King of Liverpool. It is in daily use at their establishment in West Twenty-second street, near the North River, which persons interested visiting the city, should not fail to visit, as well to see the proving house as the extensive meter factory itself.

EXTENSION OF GAS-WORKS IN DONCASTER, ENGLAND.—The gas committee of this borough are about making a considerable enlargement of their works by the addition of a new tank and gas-holder, capable of storing 200,000 feet of gas. The company own the works, and Mr. Josiah F. Fairbank, C. E., of Scarborough, is the engineer.—*London Builder.*

REPORTS OF GAS INSPECTORS.

BALTIMORE, MD.

For the week ending October 10, 1861.

Illuminating power, to Candles.	Sulphur, grs. in 100 cubic feet.	Ammoniacal Gas.	Sulphuretted Hydrogen Gas.	Carbonic Acid Gas.	Pressure in Main, *Maximum.*	Pressure in Main, *Minimum.*	Burning during trial of Gas.	Bromine condensation per cent.
16	less than 5 grains.	greatly in excess	none	none	3 6/10	2 0/10	2/10	4.9

WILLIAM E. A. AIKIN,
Inspector of Illuminating Gas.

REMARKS.

Owing either to the use of a superior quality of coal, or to more careful management of the heat during the manufacture, or perchance to both causes combined, our gas still continues very superior. With gas of the present quality, supplied under a reasonable pressure, the quarterly bills of gas-consumers would be sensibly diminished in amount. But no great difference in that respect can be expected while the enormous pressure heretofore employed is maintained.

For the week ending October 17, 1861.

Illuminating power, to Candles.	Sulphur, grs. in 100 cubic feet.	Ammoniacal Gas.	Sulphuretted Hydrogen Gas.	Carbonic Acid Gas.	Pressure in Main, *Maximum.*	Pressure in Main, *Minimum.*	Burning during trial of Gas.	Bromine condensation per cent.
15.	less than 5 grains.	in excess.	none	none	4 0/10	2 0/10	2/10	4.75

WILLIAM E. A. AIKIN,
Inspector of Illuminating Gas.

REMARKS.

The illuminating power falls a trifle short of that of the last two weeks, but the gas is still very good—no fault can be found with it, except that it contains (according to the experience of other communities) an unnecessary quantity of ammonia, and is supplied over a great part of the city under a very unnecessary pressure—that is, unnecessary for the interests of the consumer.

LONDON, ENG.

Fortnightly Report on the Gas supplied by the Surrey Consumers' Company.

Week ending.	Number of Observations.	Maximum Light, Candles.	Minimum Light, Candles.	Average Light, Candles.
Sept. 7,	4	13.38	12.72	13.09
" 14,	4	12.60	11.24	12.02

The volume of hydrocarbons averaged 4½ per cent.; carbonic acid, 1 per cent.; sulphuretted hydrogen, none; ammonia has been present in very minute quantities; on September 2d, 6th, 29th, there was but a slight trace of its presence. On the 13th there was none, this being the first time I failed in detecting it. The maximum pressure was 3 2-10 inches, the minimum 4-10 of an inch. The ordinary working pressure averaged about 8-10 of an inch.

J. NORTHCOTE VINEN.

GAS-WORKS IN THE REBEL STATES.

In answer to repeated inquiries as to the number of gas-works in the ten seceded States, we present the following list:

	Town.	*State.*	*Capital.*
1	Atlanta,	Ga.,	$50,000
2	Augusta,	"	80,000
3	Charleston,	S. C.,	723,000
4	Charlotte,	N. C.,	14,000
5	Clarksville,	Tenn.,	100,000
6	Columbia,	S. C.,	44,000
7	Columbus,	Ga.,	54,000
8	Fayetteville,	N. C.,	25,000
9	Fredericksburg,	Va.,	72,500
10	Galveston,	Texas,	150,000
11	Greensboro',	N. C.,	12,000
12	Huntsville,	Ala.,	7,325
13	Jackson,	Miss.,	80,000
14	Jacksonville,	Fla.,	30,000
15	Knoxville,	Tenn.,	63,000
16	Little Rock,	Ark.,	20,000
17	Lynchburg,	Va.,	70,000
18	Macon,	Ga.,	75,160
19	Memphis,	Tenn.,	300,000
20	Milledgeville,	Ga.,	100,000
21	Mobile,	Ala.,	200,000
22	Montgomery,	"	100,000
23	Nashville,	Tenn.,	200,000
24	Natchez,	Miss.,	46,000
25	Newbern,	N. C.,	22,000
26	New Orleans,	La.,	1,500,000
27	Norfolk,	Va.,	60,000
28	Petersburg,	Va.,	120,000
29	Port Lawrence,	Texas,	50,000
30	Portsmouth,	Va.,	100,000
31	Raleigh,	N. C.,	25,000
32	Richmond,	Va.,	341,975
33	Salisbury,	N. C.,	14,000
34	San Antonio,	Texas,	75,000
35	Savannah,	Ga.,	200,000
36	Selma,	Ala.,	20,000
37	Shreveport,	La.,	40,000
38	Staunton,	Va.,	18,000
39	Vicksburg,	Miss.,	66,000
40	Washington,	N. C.,	15,000
41	Waverley,	Miss.,	20,000
42	Williamsburg,	Va.,	30,000
43	Wilmington,	N. C.,	60,000
44	Winchester,	Va.,	36,000
			$5,429,760

RECAPITULATION.

	State.	*Gas-Wks.*	*Capital.*
1	Alabama,	4	$327,325
2	Arkansas,	1	20,000
3	Florida,	1	30,000
4	Georgia,	6	559,160
5	Louisiana,	2	1,540,000
6	Mississippi,	4	212,000
7	North Carolina,	8	187,000
8	South Carolina,	2	767,800
9	Tennessee,	4	663,000
10	Texas,	3	575,000
11	Virginia,*	9	848,475
	Total,	43	$5,429,760

* The eastern part of Virginia only, is rebellious, the western part remaining loyal to the Union.

By our tables of Gas-Light Companies, published July 16th, 1860, page 23, vol. II., it appears that the whole number of gas-works was..... 381 Capital, $47,911,215
Gas-works in rebel States... 44 " 5,409,760
Leaving gas-works in loyal States..... 337 Capital, $42,501,455

This statement is important, especially to advertisers, many of whom thought that by secession their business would suffer materially, while it is apparent that the loss of business to them must be quite insignificant; the capital retired being but eleven per cent. on the grand aggregate.

We shall be none the less glad, however, to resume our intercourse with our old Southern friends as soon as the politicians have enough of blood and thunder.

WATER-WORKS IN THE REBEL STATES.

The following list of water-works within the limits of seceded States will interest some of our readers in connection with the above:

1.	Fayetteville, N. C	$26,500
2.	Lynchburg, Va	50,000
3.	Mobile, Ala	300,000
4.	Nashville, Tenn	500,000
5	New Orleans, La	1,400,000
6.	Petersburg, Va	125,000
7.	Richmond, Va	654,079
8.	Savannah, Ga	225,000
9.	Winchester, Va	60,000
		$3,350,579

RECAPITULATION.

1.	Alabama	1
2.	Georgia	1
3.	Louisiana	1
4.	North Carolina	1
5.	Tennessee	1
6.	Virginia*	4
		9

Our tables of Water-Works, published January 1, 1861, page 205, vol. II., showed that there were.... 68 American water-works completed, with a capital of.... $62,914,579
Of which 9 are in the rebel States, with a capital of..... 3,350,579

Leaving 59 water-works in loyal States. Capital..... $59,564,000

From the above it will appear that the water-works are not entirely absorbed by the secession movement, and we think the above figures exhibit the gas and water supply interests in a favorable light for the North at least. Manufacturers of pipe, tubing, and all other material, speak of a decidedly improved demand, which will continue and increase henceforth.

* The eastern part of Virginia only is rebellious, the western part remaining loyal to the Union.

REPORTS OF GAS-LIGHT COMPANIES.

PORTLAND, ME.

To the Honorable City Council of Portland:

GENTLEMEN,—Having been elected by you as "Agent to represent the City in the Portland Gas-Light Company," I have the honor to submit a statement of my action in that capacity—and also to present such facts in relation to the affairs of said company as have come to my notice.

In July last, at the annual meeting of Stockholders for the choice of Directors, the following persons were elected, viz.:

EDWARD H. DAVEIS, RUFUS E. WOOD,
LEMUEL COBB, EZRA CARTER,
CHARLES H. HASKELL, THOMAS CUMMINGS.

These gentlemen subsequently made choice of EDWARD H. DAVEIS as President, and JAMES T. MCCOBB as Treasurer, in place of Neal Dow and George H. Shirley, respectively.

The following statement shows the condition of the Company on the 1st of January, 1861.

LIABILITIES.

Amount of capital stock paid in	283,100 00
Amount due from the company, including unpaid dividends of January, 1861, and previous	17,122 74
	$300,222 74

ASSETS.

Amount invested in machinery, real estate, service-pipe, and meters, being amount as appears by books of company	281,665 36
Coal and other materials for gas making	19,614 11
Cash	4,118 62
Accounts	1,775 45
	$307,173 54
Total assets	307,173 54
" liabilities	300,222 74
Showing an undivided surplus of	$6,950 80

On the 1st of January, 1860, the balance to the credit of profit and loss, being balance of earnings undivided the previous year, was	565 96
The gross earnings or receipts for 1860 amount to	$67,330 00
Making a total of	$67,895 96

This sum has been expended as follows:

For ordinary expenses, including taxes, interest, cost of gas making, coal, &c	39,850 27
Two semi-annual dividends, one of 4 and one of 3½ per cent	18,750 00
Depreciation on mains and meters ascertained and charged during year	5,544 89
Account carried to "Renewal Fund"	1,800 00
Balance forward to new account	1,950 80
Total	$67,895 96

The company is now taxed by the city on a valuation of $290,000, amounting to $3,132.

As before stated, there appears to be a nominal surplus, or undivided fund of $6,950 80 at the present time. In addition to this, the sum of $10,000 has been charged off from this Renewal Fund the present year, being on account of the gas-holder first built by the company, and now entirely useless and worthless; so that the entire surplus undivided earnings of the company, for the eleven years of its existence, will amount to $16,950 80, or an average of $1,540 98 each year. When it is considered that the business and investments of the company are such, as to make a depreciation of their property inevitable, it will be readily seen that the annual reserve of the company is as small as a prudent and careful management of their affairs will warrant. Indeed, the large depreciation in the single item of gas-holders, shows that the directors have not overestimated the necessities of the case, and have declared as large dividends as their earnings will allow.

The whole amount of gas consumed during the year 1860, was 19,087,040 feet. As appears by the report of my predecessor, D. W. Fessenden, Esq., between the first of January, 1860, and the date of his report—a period of 2½ months—"the number of gas consumers decreased 114." Since that time, or during the last nine months of the year 1860, the number of consumers has steadily increased.

That the confidence of consumers and of the public in the faithful and prudent management of the company has increased, since the last report of the agent, is evident from the increase in the number of consumers, instead of a diminution as before, and also from the fact that many of those who, between the 1st of January and the 1st April, 1860, refused to use the gas of the company, have, since that time, returned to its use.

It is also evident that the confidence of the stockholders, and of those seeking investment, has been increased. In February and March, 1860, when money was abundant, stock in the company was sold at par ($50), and with difficulty even at that price. In February, 1861, and at the present time—notwithstanding the scarcity of money—the stock sells readily at 4 per cent. premium.

This increased confidence of consumers and stockholders is evidently caused by the action of the city in relinquishing the absolute power to choose all the directors, by selling a portion of its stock.

In February, 1860, the city council endeavored to procure a change in the charter, so as to enable them to choose four of the six directors—persons who should not even be stockholders in the company. The controversy arising out of this attempted assumption of power, together with the general conviction that the company, in consequence of one-half the stock being vested in the city, had become a mere political machine, run for the benefit of the political party or clique in control of the city government—was the cause of great dissatisfaction among the stockholders and public generally. That the city, therefore, has acted wisely, both as regards its own and the interests of the other consumers and stockholders, cannot, I think, but be conceded.

The whole number of shares now existing in the company is 6,000; of which the city holds 1,700, other stockholders 4,300. The par value of the stock now

owned by the city is $85,000, for which $91,062 was paid.

The city has sold, during the year, 800 shares, the par value of which was $40,000, receiving, therefor, the sum of $42,773 27, which has been applied to the reduction of the city debt, and for the purposes of the new building.

The present board of directors has, since their election, in July last, made two reductions in the price of gas—the first of 50 cents per thousand feet, and subsequently a discount of 15 cents for prompt payment; and I am assured by the directors, that it is their intention to make still further reduction as soon as the business of the company will permit.

Annexed will be found the usual balance sheet of the treasurer of the company, and also a statement of the profit and loss account.

Very respectfully,

J. S. Palmer, City Gas Agent.

Portland, March 18, 1861.

GENERAL BALANCE SHEET.

1861.		Dr.	Cr.
Jan. 1.	To capital stock paid in	288,100 00	
	Temporary loans	5,800 01	
	Unpaid dividends	8,894 00	
	Expense account	1,806 14	
	Renewal fund	5,000 00	
	Sundries for unpaid bills	622 59	
	Profit and loss	1,950 80	
	By construction account		258,997 00
	Gas making		19,614 11
	Services and fixtures		8,843 75
	Meter account		13,824 61
	Sundry outstanding accounts		1,775 45
	Cash in bank and in hand		4,118 62
		$307,173 54	$307,173 54

PROFIT AND LOSS.

1861.		Dr.	Cr.
Jan. 1.	To expense account	2,707 37	
	Interest "	976 84	
	Suspense "	240 00	
	Meter " for depreciation	1,536 00	
	Services & fixtures, for "	465 46	
	Construc'n ac. for mains do.	1,250 00	
		3,251 46	
	Renewal fund	1,800 00	
	Dividend account	8,750 00	
	Balance	1,950 80	
	By balance of old account		584 09
	Gas making		19,092 38
		$19,676 47	$19,676 47

Franfort, Ky.—The old gas-works were erected upon the public square by John Lockwood, in 1847, at a cost to the city of about $17,000, including the laying of pipes, street-lamps, &c., complete. Those works were calculated and intended to make gas of any and all descriptions of grease, and were known as "Grease Gas-Works." The experiment, so far as the city of Frankfort was concerned, proved disastrous. The losses became so heavy, that the board, in 1850, seriously contemplated their entire abandonment. At this critical time, G. W. Walston submitted a proposition which was accepted by the board, offering to lease the works for a term of five years, agreeing to light the street-lamps, not exceeding eighty in number, in consideration of the lease; either party could abandon this contract by giving six months notice, and in the event of the abandonment by the city, Walston was to be allowed a fair remuneration for expenditures made by him for improvements, and for changing them into coal-gas works, which he stipulated to do. This lease to Mr. Walston promised one thing at least, which was that any further losses in the manufacture and sale of gas would be avoided, and that the public streets would be lighted without cost to the city. The management of the works by Mr. Walston proving unsatisfactory to the board and to the consumers of gas, the board determined to abandon the contract, and did so by due notice as agreed upon, which expired on the 1st March, 1853, when the works were delivered over by Walston. The parties to this contract being unable to agree upon a final settlement of accounts, the matters in dispute were submitted to arbitration, and the arbitrators allowed Walston the sum of $1,547 50, in full of all demands against the city growing out of said contract, which sum the city paid.

The board, being unwilling to lose, and to deprive citizens of the benefit of gas, for the use of which many had prepared their houses, determined to continue the making of gas, the works being now coal-gas works, and did so. The works continuing to lose money, and many complaints being made against the location, and the stench from the works on the public square, in the latter part of 1853 the board determined to reconstruct the works entire, and to change the location, which they did, and the new gas-works were completed and delivered to the city by Jno. Jeffrey & Co., in May, 1854, at a cost of $16,779 16.

The board continued to run the old works in the interim, and the new works until October, 1854, under the management of a superintendent. In October, 1854, the committee on the gas-works were placed in exclusive charge and control of the works, when, a settlement being had with the superintendent, it appeared that he had collected and paid over to the treasurer the sum of $3,521 57, being the entire receipts from the 1st March, 1853, to 1st October, 1854, a period of nineteen months. The receipts were barely sufficient to keep the works in running order; they were largely in debt, and not in good condition. Under the new arrangement, and with an increased and increasing consumption of gas, the works have been steadily improving, and are now in fine working order in all departments. The operations for the last three years have been eminently successful. The results may be briefly stated thus: The committee, in addition to having paid off an old debt of $1,300 or $1,400, have been enabled to improve the lot; to build a large and commodious coal house; to build a fine sewer to the river at a cost of $700 or $800; to fence in the grounds with an excellent fence; to extend the pipes in the streets at a cost of about $700; to light the principal streets without cost to the city; to present the works entirely out of debt; and now have six months supply of coal on hand. Within a period of three years and four months, the collection and payment into the treasury amounts to over $18,000; and there yet remains due, and which will be collected, the sum of $1,535.

In the schedule of assets belonging to the city, the gas-works are put down at a valuation of $30,000.

THE MANCHESTER, ENGLAND, GAS-WORKS.

At a recent session of the British Association for the Advancement of Science, Mr. J. Shuttleworth read a paper entitled "Some account of the Manchester Gas-works." Manchester was the first place in which the regular and complete application of gas for economical purposes was successfully tested. This was effected under the direction of Mr. William Murdoch, in 1805, at the cotton mill of Messrs. Phillips and Lee, and had made Manchester a sort of starting point in all historical notices of the subject. Their townsman, Dr. Henry, was the first to direct attention to the purification of gas; and, further, the act 5 George 4, c. 133, which passed in 1824, under which the Commissioners of Police for Manchester were authorized to establish gas-works for lighting the town, was, he believed, the first act ever granted by Parliament that empowered a municipal body to apply public funds to the carrying on of a manufacturing business for the benefit of the public. Until that act was obtained, it was an established principle in the legislation of England not to permit public bodies to become traders. It appeared, then, that in connection with gas, Manchester enjoyed the distinction of being the locality where its practical use on a large scale was first shown, of ranking among its citizens the eminent chemist by whose researches its purification was effected, and of removing the Parliamentary restrictions that prevented municipal bodies from deriving profits for public use as from its manufacture. The Commissioners of Police, who managed the affairs of the town under an old police act, the 32d George III. which passed in 1792, began the public use of gas by fixing a single lamp over the door of the then police office in Police street, at the bottom of King street. He well remembered the crowds that night after night gathered in front to gaze at it. As the use of gas spread, its superiority to all other light made the public anxious to obtain it for private consumption, and several public meetings were held for the purpose of urging the Commissioners of Police to extend the works so as to supply the general demand. The Commissioners made an appeal to the leypayers at large; and at a meeting held on the 30th of April, 1817, it was resolved:—"That it will be expedient to adopt the proposed mode of lighting the central parts of the town with gas, and, for the purpose of effecting this object, to raise the police rate from 15d. to 18d. in the pound." The gas-works were enlarged, a "Gas Committee" was established; but as the right of the commissioners to sell gas to private consumers was uncertain, it was thought desirable to obtain a special Act of Parliament to legalize what had been done, and to give power to continue the works, prescribing the application of the funds derived from them. While the commissioners were preparing their measure, a notice appeared on the 20th September, 1823, from persons entirely unknown in Manchester, and without any previous intimation of their intention, to apply to Parliament for a bill to authorize the establishment of a "Manchester Imperial Joint-stock Oil-Gas Company, to light with oil or other gas the town and parish of Manchester." On this notice appearing, measures were taken to oppose the project, and at the same time to promote the previously intended purpose of obtaining a gas act for the town. In furtherance of these objects meetings were held in Manchester, Salford, Ardwick, and other townships of the parish. Though the opposition to the Oil-Gas Bill was thus formidable, the promoters continued their efforts, and might have succeeded, but in getting up petitions in favor of the bill they had resorted to the grossest fraud in attaching forged and fictitious signatures, and on these frauds being proved to the committee by the clearest evidence, the committee to which both bills had been referred at once indignantly rejected the Oil-Gas Bill, and adjourned without making any report, alleging that they dispensed with this customary formality from a motive of mercy to the parties, inasmuch as they could not make a report without bringing the authors of the fraud and contempt to justice. So strong and general was the indignation excited in the house, that on an attempt being made a few days after to revive the committee, the motion was negatived, not in the usual way by a quiet orderly vote, but as it is stated in the newspaper reports of the time, "by a thunder of Noes." The resentment thus provoked by one party had, perhaps, a reactionary influence in favor of the other, for the defeat of the Oil-Gas Bill was speedily followed by the passing of the Manchester Act, thereby practically recognizing the principle that such establishments might be created by public funds, and conducted by public bodies, for the public benefit; and further, that the object to which gas-works especially are subservient, is more likely to be secured by a general establishment, conducted under effective public control, by a public body, than by any private association, founded solely for private gain; in short, that such establishments are not only legitimate in principle, but are even the best, because the most certain and convenient means of effecting those most important public improvements which progress and circumstances make necessary in towns, which might not be otherwise effected. The act, unfortunately, left the constitution of the body which, under the act of 1792, governed the town, and from which the gas directors had to be chosen, unaltered. The governing body was not composed of a limited number of persons chosen as representatives, but was constituted of all the inhabitants who paid a rent of £20 a year. Under such a system it was clear that, whenever there was a strong collision of opinion on public questions, persons on both sides would qualify in such numbers as utterly to destroy the deliberative character of the public meetings that might be held. In the proceedings, both with respect to gas and other public affairs, that took place for years after the passing of this act, so great was the excitement that prevailed, that crowds of qualified inhabitants became Commissioners of Police, and for a long period the meetings that were held were characterized by the most disgraceful turbulence and disorder. At one meeting alone, in 1827, no less than 665 persons qualified as commissioners. At these meetings the most extravagant propositions were brought forward, such as, for instance, that gas should be supplied to consumers at cost price. The parties most prominent and offensive in this violent agitation

were chiefly the lowest class of shopkeepers and publicans. Then followed an agitation for the sale of the gas-works; but this was eventually suspended by the appointment of the late Mr. Thomas Wroe to the comptrollership of the works. This was quite an epoch in the history of the works. In the first year Mr. Wroe reduced the price 5 per cent., and raised the production from 88 millions of cubic feet to 96 millions, or 9 per cent., and increased the profits from £10,200 to £13,500, or 34 per cent. In the ten years that Mr. Wroe was connected with the works, he reduced the price from 10s. 6d. to 5s. 9d., and raised the annual profit from £10,200 to £31,700. The benefit derived by the town from Mr. Wroe's services amounted to an annual sum of £45,416. This was stated in a report of the finance committee, bearing date August 22, 1842, which he thought ought to be published for general circulation, as it contained particulars of the services of one who had not yet had justice done to his unparalleled work as a public servant. For the introduction of the Municipal Corporations Act to Manchester, they were indebted to Mr. Alderman Neild, who originated the movement, and was untiring in his exertions until it was accomplished. The Municipal Act, among its many other advantages, gave a security and permanence to the gas establishment which it could not be considered to possess previously. The consequences had been highly important. To the inhabitants it had supplied the best and cheapest light that exists. To the public at large it had contributed regularly funds for widening old and forming new streets, to an extent that had afforded needful accommodation for the vast increase of traffic, of population, and merchandise, that had grown up among them, and which, without such aid, would probably have been actually prevented by the want of space in the streets and thoroughfares, which was essential to its existence. In both social and political economy, facility of communication and transit was one of the most important elements of national prosperity, and demanded unceasing attention to every available means for securing it. In this respect the Manchester gas-works had been especially useful. Before their establishment, it was the standing and universal reproach of Manchester, that it was the worst and most inconveniently built town in Europe. It possessed no fund for general improvements, and was so rapidly increasing as to make from day to day the necessity of such a fund more alarmingly apparent. Without the funds derived from the gas-works, the physical necessity of wider and shorter streets would either have put a stop to the growth of the traffic, or have rendered absolutely imperative a resort to large improvement rates, thus not only most injuriously affecting the value of property throughout the town, but also checking and depressing all other interests. Such were the exigencies of the town in this respect that, at a meeting of the Commissioners of Police, in 1827, a scheme of necessary improvements to meet the rapidly advancing wants of the community was brought forward which involved an estimated cost of from one to one and a-half million sterling. He thought it was a happy circumstance for Manchester, in a threatened necessity of such vital importance to its prosperity, that a fund existed in the profits of the gas-works of sufficient magnitude to equal the demand. That these estimates were not overrated, was clear from the fact that, in addition to improvements still in progress, and still wanted, the payments from the gas profits, for the purposes then contemplated, have amounted to more than £700,000, besides debts incurred that were yet owing. In the first year of the establishment of the gas-works, the profits amounted to £263 10s. 5d. In the following seven years they amounted to £20,000, and of this, £15,000 to £17,000 was paid towards the erection of the Town Hall. From 1825 to 1839 inclusive—from the date of the first gas act to the grant of the charter, a period of 15 years—the profit was nearly £172,000, or an average of £11,500 a year; and from 1840, when he became a member of the gas committee, to 1859, when that connection ceased, a term of 19 years, they amounted to £660,000, or an average of nearly £35,000 a year, or treble that of the preceding 15 years. The price to the consumer, during the same period, had been reduced from about 16s. to 4s. 6d. (in 1859) per 1,000 feet; and but for a resolution of the Town Council, in 1851, by which one-half of the profits was diverted from improvements to relieve the water rate, would certainly have been reduced, ten years ago, to a medium of 4s. per 1,000 feet. According to the last published report of the Gas Committee, to June 24, 1860, the amount of capital in the gas-works was £501,326; gas produced in the year ending June, 1860, 779,150,000 cubic feet: rental, £154,658, which was equal to an average charge of about 3s. 10¾d. per 1,000 feet. The price of gas within the city is from 3s. 8d. to 4s., or a medium of 3s. 10d. The cost of cannel, £56,177, equal to 1s. 3¾d. per 1,000 feet; cannel consumed, 76,039 tons, which showed a production of 10,240 feet per ton. By the Gas Committee continuing to attend to the quality of the gas, so as to secure the highest purity and illuminating power, and by the council so regulating the price by fixing it at as low as was commensurate with the capital employed, and the business done, they might expect not only a continuance but an augmentation of the benefits of which it had been a certain and important source.

Mr. Alderman Neild paid a high tribute to Mr. Shuttleworth's services on the Gas Committee.—Mr. E. Chadwick had always held up the Manchester Corporation as an example to other municipalities; and he suggested that the circulation of Mr. Shuttleworth's paper among the various towns in the kingdom might prove of great advantage.—A member of the association eulogized the purity and illuminating power of the Manchester gas.—Professor Rogers compared the condition of affairs in Manchester with what was observable in Oxford. In the latter place the company was bound by law to pay over profits, beyond a certain amount, to the Commissioners of Lighting and Paving. They not only provided the worst gas in England, but infringed the Act of Parliament in every conceivable way. The only plan to compel them to do their duty, he supposed, was by filing a bill in chancery, and they all knew what that meant—immense expense, prodigious delay, and a doubtful termination. Mr. Leigh described the process by which the purity of the Manchester gas had been secured.—Mr. Swallow said that, on the 29th of September, 1860, there were 4,467 cellar dwellings in Manchester; and of that number 3,884 were actually inhabited. If the corporation could persuade the owners of cellar property to allow the cellars to be lighted with gas, better ventilation would be secured, and the health of the people thereby improved, and it would prove a good police adjunct, as it was well known that light was abhorrent to crime.—Dr. Farr advocated the publication of the paper with a view to other corporations being made aware of the success which had attended the lighting of the town being in the hands of the authorities.—Mr. Dyson differed from Mr. Shuttleworth on the gas question, and contended that gas ought to be supplied to the inhabitants at cost price.—Mr. Medcalf said there were other objects to be accomplished by the corporation than providing cheap light, such as draining and making provision for the preservation of the public health. This could not be done if the gas was sold at cost price.—The Mayor of Manchester said that the Gas Committee were, as far as possible, extending the supply of gas into cellar dwellings, both by hiring out meters and supplying fittings. Their anxiety was to do away with cellar dwellings altogether. (Hear, hear.) But this would be a work of time. As to supplying gas at cost price, he did not think that quite feasible. The corporation rather wished to supply a good article cheap, and at a moderate profit. He thought it would be advantageous to communities to buy up existing companies; but there were difficulties in this, as illustrated by the case of Bolton, where the existing shareholders contended for a guarantee of ten per cent.—The Chairman said it seemed to be the opinion of the meeting that the best means should be taken for having Mr. Shuttleworth's paper printed, and copies of it sent to the different municipalities in the country. The committee would meet on Monday morning, and would consider the best means of accomplishing that object, so that the valuable facts which the paper contained might come before the public with whatever advantage could be conferred upon them by the high approval of that section. He was glad to find that the long labors of Mr. Shuttleworth were so largely appreciated in the town. On general principles, no object could more fittingly be placed under municipal control than those of light and water, and amongst the many other obligations they owed to Manchester must be added that of having showed an example in this respect.

PATENTS.

UNITED STATES.

2,277.—Lewis Jennings, of New York City, Assignor to himself, R. Dickinson and Jos. C. Fuller, of the same place, for an Improved Filtering Cup:

I claim applying a filter to or near the bottom of any ordinary drinking cup, and attaching a tube to the cup and filter in such a way that the act of drinking through the tube shall effect the filtering of the liquid substantially as described.

2,278.—Geo. H. Rogers, of Baltimore, Md., assignor to himself and John Rogers, of the same place, for an Improvement in Hydrants:

I claim the combination of the valve spindle, C, and guide-tube, D, the spring, F, and the flanged ring, E, with the casing, A, when the whole are constructed and arranged as described, for the purpose set forth.

2,295.—Benjamin Douglas, of Middletown, Conn., for an Improvement in Pumps:

I claim a pump rest having a seat or support for the induction valve and pipe in its upper end, and a foot or support, substantially as set forth, at its lower end, and in combination therewith, I claim constructing the foot as described, so that the pump may be held in place by permanent means, or held temporarily in any desired location by the foot of the operator.

2,296.—Joseph S. Elliot, of Philadelphia, Pa., for an Improved Register for Gas Meters:

I claim the construction and arrangement described, of the concentric rings of perpendicular, cylindrical stop teeth or studs, h h, and the perpendicular gear teeth, i i, on the driven wheels, together with the recesses, k, and perpendicular driving studs, l, in the drivers, the whole operating together in the manner described and set forth, and for the purpose specified.

I also claim, in combination with the subject matter of the above claim, arranging the mumeral disks, a d e f, upon the shafts of their respective wheels, A D E F, so as to operate behind the perforated front plate, G, of the frame, as described and set forth, and for the purpose specified.

2,308.—S. Sargent, of Watertown, Mass., Assignor to himself and A. P. Knapp, of Needham, Mass., for an Improvement in Coal-oil Lanterns:

I claim the arrangement and combination of the device for enabling the wick to be regulated outside of the lantern, the perforations i i, in the base flang of the lamp, D, the draught collector, u, division plates, N N, perforated regulating plate, P, and guard cylinder, R, in the manner and for the purpose specified.

2,319.—Gilbert Van Camp (assignor to himself and Jasper Berger,) of Somerset County, N .J., for an Improvement in Pumps:

I claim, first, The combination and arrangement of the short closed cylinder, A, the solid piston, B, working from end to end of said cylinder, in connection with the cylinder caps. C and C', substantially in the manner and for the purposes set forth.

Second, In combination therewith, I claim the cylinder cap, C, and the stuffing box, M, as and for the purposes set forth.

[This invention relates to certain improvements in horizontal double acting pumps, and consists in a novel and simple arrangement of valves and water passages by which, with a short cylinder fitted up with an ordinary piston, a powerful and continuous stream of water is obtained.]

2,336.—A. T. Dunshee, of McKeesport, Pa., for Improvement in Water Filters:

I claim the perforated bottoms, n and g, filtering cloth, f, and openings, m and l, when used in connection with the triple strata of charcoal prepared and proportion as set forth.

2,344.—H. Q. Hawley, of Albany, N. Y., for Improved Meter for Gas, Water, &c.:

I claim, first, Combining the piston or diaphragm of a fluid meter with weighted levers or tumbling bars for operating the inlet and outlet valve or valves thereof, by means of a rod, I, and chains, H H', applied to operate substantially as specified.

Second, The employment in a fluid meter of a system of valve-operating mechanism in which weighted levers or tumbling bars arranged within the meter are first brought by the movement of the piston or diaphragm to a position or condition to exert upon the valves a tendency to reverse their position, but not to move them until they have been started by the direct action of the piston or diaphragm in its further movement, and then caused to suddenly complete the movement of the valves, substantially as described.

2,347.—R. H. Lecky, of Allegheny City, Pa., for an Improved Machine for Drilling Oil Wells:

I claim, first, The use of drop, p, having a revolving and perpendicular motion, and used in combination with the self-acting catches, t, and tripper, r, as described and for the purpose set forth.

2,371.—Cornelius Bollinger, of Glen Rock, Pa., for Improvement in Pumps:

I claim, first, the bridge, R, platform, N, and plunger, F, in combination with the pipe, L, cavity, I, and valve, K, when arranged and operated as set forth.

Second, I claim the elastic ring packing, H, in combination with the flange or rim, G, and contraction, C, in the cylinder, A, when these parts are arranged in relation to the stationary fulcrum, O, in the platform, N, as and for the purpose specified.

2,398.—A. H. Platt and W. S. Rosecrans, of Cincinnati, for Improvements in Lamps:

We claim the combination of the concentric tubes, a a, converging upward, and the deflector, d, having the form of an inverted cone, substantially in the manner and for the purpose specified.

We also claim the arrangement of the separate serrated wheels, b b, extending respectively from the tubes, a a, outward just through the cone, A, in combination with said tubes and cone, substantially as described.

ALL DARK IN GALVESTON, TEXAS.—At Galveston, when our informant left, the gas-works had been compelled to stop for want of coal, and there was but one box of candles in the town. The people were absolutely suffering for the common necessaries of life. This is one of the charms of the rebellion.

BENZOLE AS A SUBSTITUTE FOR TURPENTINE.—As turpentine has become scarce and high in price, owing to the supplies from North Carolina being cut off, the naphthaline oil obtained in the distillation of the petroleum of the oil wells in Pennsylvania, has been tried as a substitute in painting, and found to answer well. It is now used in place of turpentine in the car-works at Pittsburg, Penn. This is a new application in the arts, and a wider field has been opened for the sale of coal-oil products.—*Scientific American.*

JAMESTOWN, N. Y.—This company was organized in May, 1861. Capital, $30,000. Mr. Charles Roome and F. A. Sabbaton took the contract. Works are about 15,000 c. f. capacity, and so arranged as to be enlarged with little expense; two miles of pipe, clay retorts, &c., &c.; meters from Down & Merrifield; use Erie, Pa., coal. The town has beetween 3,000 and 4,000 inhabitants; the business portion was all burnt out last year, but good, substantial brick buildings have taken the place of the old wooden ones, and all will be occupied before winter.

THE ARTESIAN WELL AT FORT MCHENRY.—Workmen have succeeded in striking a vein of good water at the depth of one hundred and forty-two feet from the surface in a bed of gravel. This will be a great convenience to the Fort should the supply prove adequate.

GAS-ENGINES FOR STEAMBOATS.—M. Lenoir has propelled up and down the Seine, at Paris, a small iron screw boat by means of his engine, in which the motive-power is compressed gas. On August 20 he took on board six gentlemen, all that his boat could carry, at the Bridge des Invalides, and descended to the Bridge de l'Alma, and returned again to the Bridge de la Concorde. His little vessel was entirely without oars, sails, chimney, fire, or any other sign of a motive-power. This experiment is said to be only a prelude to one upon a larger scale, which will shortly be made by an American inventor, named M. Chandor, who proposes to navigate a pleasure yact, fifteen metres in length and two and a-half metres broad, by means of his gas-engine, from the Louvre down the Seine, through the North and Baltic Seas, and to land at St. Petersburgh

Croton Aqueduct Department.

CROTON AQUEDUCT DEPARTment, October 9, 1861.—Public notice is hereby given that a further penalty of ten per cent. will be added to all unpaid Water Rents, on the first day of November next.

R. C. HANCE, Register.

WOODEN GAS-PIPE.

PATENT PREPARED WOOD-PIPE for Gas Mains.—Wm. Stephenson would call the attention of Gas Companies and Engineers to his Patent Prepared Wood Gas-Pipe. This Pipe is prepared in a way so as to effectually prevent its decay, and has been proven to be superior to Iron pipe in three towns where he has erected Gas-Works.

The cost of the Pipe, and the facility with which it can be laid, and *also its not being subject to expansion* and contraction by change of temperature, render it *entirely free from leakage;* there is also less condensation than in Iron pipe. These are among the advantages gained by the use of this Pipe, and are sufficient to recommend it to the favorable consideration of Gas Companies and Engineers; and it is considered, by those who have examined it, as a most valuable improvement.

A sample of this pipe may be seen at the rooms of the AMERICAN GAS-LIGHT JOURNAL, No. 39 Nassau street, New York; and further information, with reference to this Pipe, may be obtained by application to the Patentee,

WM. STEPHENSON, Gas Engineer,
Fremont, Ohio.

WOODEN PURIFYING TRAYS.

WOODEN TRAYS FOR GAS-PURIFIERS.—JOHN L. CHEESMAN, No. 147 Avenue C, near Tenth street, New York, manufactures his Patent WOODEN TRAYS for GAS-PURIFIERS, *cut out of the solid wood*, superior to the ordinary iron plates, cheaper and more durable. The attention of Gas Companies and Engineers is called to this improvement, which has been adopted by the following Gas-Works:

Albany, N. Y.	Manhattan, N. Y. City.
Chicago, Ill.,	Philadelphia, Penn.,
Williamsburgh, N.Y.,	Worcester, Mass.

See engravings on page 148, vol. II.

CONICALLY SLOTTED SOLID Wood Trays for Gas-Purifiers.—Admitted to be the best, cheapest, and most durable seives for gas-purifiers ever used.

Secured by Letters Patent of the United States, both for the machinery used in the manufacture, and for the seive itself.

For sale on reasonable terms to Gas-Light Companies or Agents, on application, by letter, to the patentee,

RICHARD G. HUNT,
631 Fourth st., near Avenue C,
New York City.

N. B.—All persons are warned against purchasing these seives of others who falsely pretend to have patents for them. Suits will be commenced immediately against all persons infringing my patents by using or making wooden sieves, but those who hereafter purchase from me can buy their seives cheap and will not be troubled by me on account of former purchases. R. G. H.

MISCELLANEOUS.

HARRIS LOUDERBACK, FIRE-BRICK LAYER
AND GAS RETORT SETTER,
No. 1005 Clement Street, Philadelphia.

PHOTOMETER APPARATUS and Room for Sale.—The Room is about 6 feet wide by 12 feet long, painted black inside and screwed together. It can be taken down and boxed for transportation. All the pipes and fittings are complete for immediate use. Address PHOTOMETER, care of the AMERICAN GAS-LIGHT JOURNAL, 39 Nassau street, N. Y.

HOT WATER GAS STOVES, Manufactured by HUNTER, KELLER & Co., 144 Centre street, New York.
See Engravings on page 163, Vol. II. of this JOURNAL.

GAS-ENGINEERS.

SCAMMON'S GAS-APPARATUS for Private Residences, Factories, Hotels and Cities. See engravings of Rosin and Coal Gas-Works in AMERICAN GAS-LIGHT JOURNAL for Dec. 1, 1860, pages 179 and 180.

STEPHEN SCAMMON,
GAS-ENGINEER AND CONTRACTOR,
561 Broadway, New York.

GAS-WORKS ERECTED FOR Cities and Villages. Plans and Specifications furnished for works of any desired capacity, drawings of Retort Settings for Benches of one, two, three or five Retorts.

GAS APPARATUS
of every description.

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Gas-Engineer and Contractor, Albany, N. Y.

DIMMOCK, DWIGHT & CO. Engineers and Contractors for the erection of Coal Gas-Works. Offices 135 and 137 William street, New York City; and No. 2 Elm street, Springfield, Mass.

References by permission:

GEORGE D. MORGAN, Esq., New York.
AARON CLAFLIN, Esq., "
A. B. WOOD, "
GEORGE BLISS, Esq., N.Y., Pres. M.S & N.I.R.R.Co.
GEO. M. ATWATER, Esq., Springfield, Mass.
JAS. D. BREWER, Esq., Pres. Springfield Gas Co.
JOHN I. BAKER, Esq., Pres. Beverly Gas Co.
HENRY E. RUSSELL, Esq., Pres. N. Britain Gas Co.
J. DUNHAM, Esq, Pres. Norwich, Ct. Gas Co.
W. C. STREET, Esq., Sec. Norwalk, Ct. Gas Co.

THE AUBIN GAS-WORKS CO., OF ALBANY, N. Y., refer to the following Gas-Light Companies using their Works, to prove that Gas stocks can pay handsomely, and yet a rich and *cheap* Gas be made, viz.: Plattsburgh, Whitehall, Palmyra, Waterford, Bath, Amsterdam, Fort Plain, N. Y.; Rutland, Vt.; Flemington, N. J.; Smyrna and Dover, Del.; Jersey Shore and Pittston, Penn.; Greensboro and Salem, N. C.; Sorel, St. Hyacinthe, and Point Levi, Canada. Agents wanted to extend the sale of the Aubin Portable Gas-Works, unsurpassed for simplicity, safety and economy.

STEAM-PUMPS.

WORTHINGTON'S STEAM PUMPS, extensively used by Gas-Light Companies. For Sale at greatly Reduced Prices.

Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.

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PARIS'S PATENT
Glass-Enamelled Wrought Iron Tubes,
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LAP-WELDED IRON BOILER TUBES.

TUBES FOR ARTESIAN WELLS, CONVEYING STEAM OR WATER, SHAFTING, &c., SCREWED OR COUPLED TOGETHER, in various ways.

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of all descriptions, for
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Office 1908 Market street, Philadelphia.

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T. G. ARNOLD, Manufacturer of Gas Burners, Mercury Cups, Portable Sockets, Burner Pillars, &c., No. 447 Broome street (second door west of Broadway), New York. Imported Scotch Tips and Burner Plyers always on hand.

ORNE'S PATENT FILTER-REGULATING GAS-BURNER, admitted by all practical and scientific men, who have examined its movements, to be

THE BEST GAS-BURNER YET INVENTED.

They are self-regulating, gas-purifying, indestructible, and most economical.

For sale by S. A. STETSON & CO.,
350 Washington st., Boston.

PERFECTION.—This recent Improvement in Gas-Burners embraces the great economy of the Hicks Patent Burner, a gain of over 75 per cent. in light. This Burner is now offered to the Trade and all consumers of gas, at the price of the common burner. It is anti-corrosive, gives a uniform and beautifully-shaped blaze, under any pressure, and will not get out of order.

It has been adopted by the Manhattan and Brooklyn, N. Y., Gas-Light Cos., for street lamps.

Samples will be sent to each Gas Co. in the United States, if requested.

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SABBATON'S PATENT FURNACE-DOORS, & FRAMES,
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RETORTS,

as a very superior article.

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" " Cleveland, O.
" " Chicago, Ill.

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NEW YORK FIRE-BRICK Manufactory. (Branch Works at Kreischerville, Staten Island.)

B. KREISCHER & CO., office 56 Goerck street, corner Delancy street, New York.

GAS-HOUSE TILES and FIRE-BRICK of all shapes and sizes. FIRE MORTAR, CLAY, and SAND articles of every description made to order at the shortest notice. B. KREISCHER, M. MAURER, A. WEBER.

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CELLULAR GAS-RETORTS.—C. M. CRESSON'S CELLULAR Gas Retorts, Patented October 3d, 1854. Adapted to the manufacture of GAS from Rosin, Coal, Wood, &c., and now in use at the Philadelphia Gas Works. Patent Rights for sale. For information apply to HENRY S. HAGERT, Attorney for Patentee, S. E. cor. of Walnut and Sixth sts., Philadelphia, Pa.

WATER-METERS.

H. R. WORTHINGTON'S PATENT Water-Meter.—This Meter combines accuracy, simplicity and remarkable durability, with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

HENRY R. WORTHINGTON,
61 Beekman street, N. Y.

ANTI-FREEZING APPARATUS.

FREEZING OF GAS-PIPES.—Walton's Patent Anti-Freezing Apparatus illustrated by Engravings in the AMERICAN GAS-LIGHT JOURNAL, of Jan. 1, 1861, page 212, is the most simple, durable and efficient of any known process.

See also certificates from Cincinnati, O., and Louisville, Ky. Gas-Works in same number, page 209. Address, JOHN WALTON,
Sup't Gas-Works, Louisville, Ky.

MEDALS AWARDED TO THOMAS GLOVER'S PATENT DRY GAS-METERS.

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Mr. ALBERT POTTS, the well known Inventor of the LAMP-POST LETTER-BOXES, which have been adopted by the Post-Office Department for the large cities of the United States—and also of the GAS METER BOX. to be set in the front walls of houses, thus doing away with visits from Gas Inspectors, or burglars in gas-clothing, has lately brought forward a third Invention, which in point of importance and world-wide usefulness, surpasses the others entirely.

These SIGNAL LIGHTS are intended for use on Vessels propelled by Steam, and those exclusively. They specially indicate the presence of a Steamer, and by their use, there will be less likelihood of mistakes, and consequent collision than at present. They are also intended for SIGNALLING AT NIGHT, and can be used for that purpose UNDER ANY CODE of SIGNALS NOW ARRANGED FOR FLAGS.

This Improvement in Lights for Steam Vessels, consists in having the Lanterns containing the colored lights, connected by means of a series of cogged gearing with some convenient part of the Engine or Machinery, so as to cause them to have a revolving motion around their axis. On side wheel steamers, the Lanterns should be placed directly over the wheel-houses, and the power, or motion to turn them, may then be very conveniently obtained frem the paddle-wheel shaft. On Propellers, the Lanterns should be placed on each side of the Pilot House, or hurricane deck, and the rotary motion derived from any convenient or suitable part of the Engine or Propeller Shaft. Each Lantern is supported on the end of movable cranes, so that their relative positions may be changed and properly adjusted to suit the view of observers on either side of the vessel at the time of signalling.

The Lanterns to be used in this improvement may be constructed for Burning Oils, Fluids, Gas, or any of the known modes of illumination, and should be furnished with one or more lenses and reflectors, so as to concentrate the rays of light, and project them over the horizon with the greatest intensity. The lenses for this purpose should be made with colored glass, viz., Red and Green, and the position of the respective Lanterns, according to the color of the lenses therein, must be placed on the sides of the vessel so as to answer to the requirements of Rules and Regulations made and published by the Supervising Inspectors of Steamboats, agreeably to the Act of Congress of the United States in such cases made and provided. That is to say—by said Regulation—the Lantern having the green lenses for producing the Green Colored Light, must be placed on the starboard side of the vessel, and the other Lantern producing the Red Light, to be placed on the port side thereof. In pursuance, also, of the aforesaid Rules and Regulations, there is to be found in board and behind each Lantern, a screen to answer the purposes therein mentioned.

The cogged gearing, by which the Lanterns are connected with the Engine or paddle wheel shaft, and thereby caused to revolve when the Engine is in motion, is so arranged that the connection may be readily shipped or unshipped, and the lanterns made stationary or otherwise, at the pleasure of the Pilot, or those whose duty it may be to operate and attend to the same. The cranes on which the Lanterns are placed, are also rigged so as to be readily turned horizontally from one position to another, so as to present one or both lights to the view of observers when laying athwart ships at the time of signalling.

On the Use and Application of the Improvement for Night Signals.

When the vessel is under weigh, or going ahead in its course, the Lanterns are to be placed directly athwart ships, so that such colored light therein will then have the position and place prescribed by Rule Seventh of the aforesaid Supervising Inspectors of Steam Boats, and with the screens behind them, as above described, will then answer all the intents and purposes for which the colored lights are thus required to be used, as illustrated in the several diagrams published by said Inspectors for the working of a system of Colored Lights. The Lights in this case, according to the color seen by the observer, indicate the course or direction of the vessel whereon they are carried. When the Lanterns with the colored lights therein, are made to revolve around on their axis, as proposed in this improvement, in addition to the signal above, another, and as we believe, very important and useful signal is thus formed, indicating that the vessel, whereon it is carried is a Steamer. In dark foggy nights, it is found by experience, to be somewhat of a difficult task to distinguish sailing vessels from Steamers and Propellers, especially when the latter are rigged, and carry a press of sail. When Steamers meet "head and head," it is the duty of each to pass to the right, or, on the larboard side of the other. Whereas, when a Steamer meets a sailing vessel, the former must give way and allow the latter to pursue its course. Hence, to carry out the regulations of the said Steamboat Inspectors, and prevent collisions, it is important to have some infallible sign, whereby the character of the vessel may be readily seen and determined. Several very fatal collisions have recently taken place through mistakes of this kind.

On Signals for Speed and Distance.

The gearing of the Lanterns with the paddle wheel or propeller shaft, may be so arranged as to be an index of their speed. A very good proportion, would probably be to make the Laterns turn about one third as fast as said shaft. Hence, when the speed of the vessel is previously known, when making a certain number of revolutions of the paddle or propeller, it becomes an easy task from observing the time with which the Lanterns thereon may be turning to approximate to the speed with which the said vessel is moving at the time of observation. Again, as the arcs described by the rays of light from each lantern, as they revolve around on their axis, is greater in proportion to the distance from said lantern, so will the time in which said rays move over any given space, be less in the same proportion. Hence, when the lights are very remote, or far off, from the observer, the duration of each column or cylinder, of rays from each lense, would pass the eye of the observer, in a short space of time, or with great velocity. Whereas, at a nearer point of observation, the time of its passage would be considerably lengthened, or the motion thereof apparently much slower. From these facts, we believe the improvement is susceptible of indicating, in an approximate manner, the speed and distance of vessels whereon the revolving lights may be used.

On the Application of the Improvement for Marine Telegraphic Purposes.

The Revolving Lights can be readily applied to the general purposes of Marine Signalling at night, as follows: In order to show this application, we have adopted the Numbers as given in Roger's Code of Marine Day Signals, believing that work to be somewhat of a standard in matters of this kind. Instead of the flags used in the above code, for day signals, to indicate the combinations of two or more letters of the Alphabet, which combination is referable to certain numbers indicative of the words or sentences telegraphed, we propose to perform the same operation, at night, by means of the two revolving colored lights, so as to indicate the numbers directly to which the intended words or sentences to be telegraphed are referable. Thus, whether the vessel to be signalled is ahead, astern, or abaft the beam, the position of the two colored lights must be so adjusted, by means of the moveable cranes, whereon said lanterns or lights are fixed, that the two lights may be fully made visible to the observer. When both lights are thrown into this position, stopping the motion of the lanterns may be the signal for calling attention, or a rocket fired off, or the steam whistle blown, would answer the same purpose. Now, in order to represent the ten numerals, we propose to indicate them by the respective motions of the two colored lights, as follows:

RED LIGHT.				GREEN LIGHT.			
One Red,	Represents	Number	1.	Two Green,	Represents	Number	2.
Three	do. do.	do.	3.	Four	do. do.	do.	4.
Five	do. do.	do.	5.	Six	do. do.	do.	6.
Seven	do. do.	do.	7.	Eight	do. do.	do.	8.
Nine	do. do.	do.	9.	One	do. do.	do.	0.

In the above arrangement, it will be seen that all the odd numbers are made by the Red Light, and the even numbers by the Green Light. In order to indicate the repeat of the last number, once or more times, or for other special purposes, which may hereafter be found useful and necessary, an even number of lights may be shown by the Red, and an odd number by the Green. It will be understood that when the Lanterns are made with three lenses in them, the numerals as above arranged are formed by the number of times a new light or lense is presented to the observer. Thus to indicate the number 3, the Red Light or Lantern would make one entire revolution; and to make the number 6, the Lantern carrying the Green Light would make two revolutions, and so on with the other numbers. When a symbol is made, the motion of the Lantern is to be suspended for a short time, and when a number expressing a sentence is formed, the lantern may be stopped for a longer period, or some one of the special signals above referred to, may be used for this purpose.

To show the application of this improvement as above mentioned, whereby these Lights can be used as readily for Night Signals, as Flags are used for Day Signals by the author of Roger's Code, we shall use the sign O colored red or green, according to the light used, to show the number of movements performed by the respective lights in order to represent any desired number of said code, suitable for the required purpose.

RED LIGHT.	GREEN LIGHT.
O, O, O, O, O,	
O, O, O, O, O, O, O.	
	O, O.
	O, O.

The above would represent the number 5722, and by reference to said Roger's Code, would be found to stand before the sentence:

"WILL YOU SHOW THE NUMBER THAT REPRESENTS YOUR NAME?"

RED LIGHT.	GREEN LIGHT.
O.	
O, O, O, O, O.	
O, O, O, O, O, O, O.	
	O, O.

Here the number expressed is 1572, and per the same Code, stands for

"WHERE ARE YOU BOUND?"

RED LIGHT.	GREEN LIGHT.
O.	
O, O, O, O, O, O, O, O, O.	
	O, O.
	O, O, O, O, O, O, O, O.

The number thus expressed is 1928, and per said Code is

"WHAT IS YOUR CARGO?"

RED LIGHT.	GREEN LIGHT.
O, O, O, O, O.	
	O, O, O, O, O, O.
	O.
O, O, O.	

Here the number expressed is 5603, and stands for

"HAVE YOU ANY NEWS?"

(RED LIGHT.)

Fig. 2

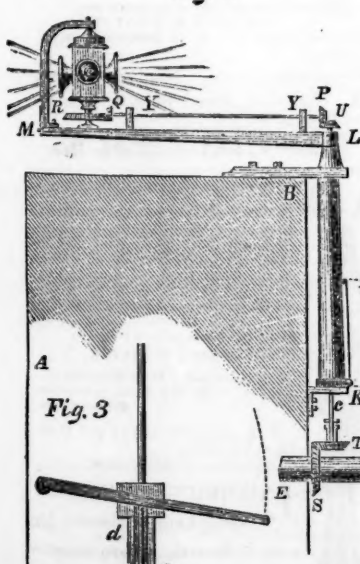
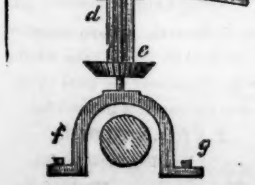


Fig. 3



(GREEN LIGHT)

Fig. 1

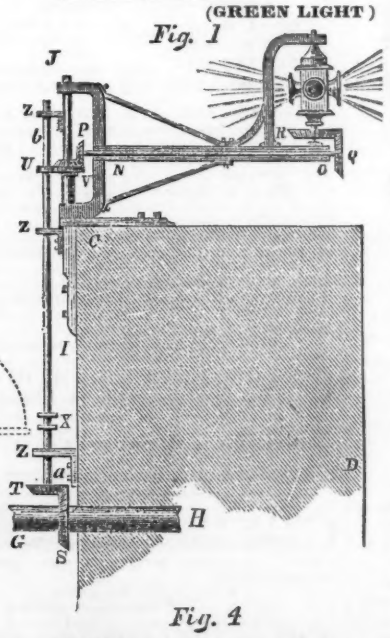


Fig. 4

MECHANICAL CONSTRUCTION.

In our engravings, Figs. 1 and 2, represent Vertical Sections through the wheel-house. In them E F and G H represent portions of the main Shaft. In Fig. 1, I J is a stout Iron or Wooden post, fastened against the side of the wheel-house, directly over the main shaft On the upper part of this post, is fitted the moveable arm or crane N O, to the main shaft is fitted the bevel wheel S, and to the lower end of the rod a b, is fitted a corresponding wheel T. U is a small pinion on a b, which gears with the spur wheel, V, which in turns gives motion to the wheels, P and Q, and so revolves the lamp R. It will be seen that a Rotary motion is given to the lamp, when the main shaft is in motion and a b connected.

It can be disconnected by a lever, acting between the bosses X, which will elevate the rod in the guides Z Z Z.

Fig. 2 is another arrangement, for the same purpose. In this, K L, represent a hollow Shaft, on which is firmly fastened, the arm L M, on which is the lantern. The hollow post is secured to the wheel-house by the straps K and B, and it can turn freely in them, the other part being the same in them as in fig. 1

The lever K W, when drawn down, will turn the frame in any required position around the Shaft c U. In fig. 1, the arm or crane N O, may be operated by cords from the wheel house, but in this device, the rod c U. does not lift up as in fig. 1, but in its place, the lower end is made square, and on it slides the short tube, d E shown in fig. 3. The lower end of the rod turns on a bridge, f g, spanning the main shaft. On the upper end of the tube, d e, a lever is attached by means of boxes and collars as shown in fig. 4. This lever when raised carries with it the beveled wheel T, thus disconnecting the gearing apparatus.

ALBERT POTTS, Patentee,
PHILADELPHIA, Pa.

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The careful shipment of the best qualities, of Cannel and Coal, at the lowest rates current at the time of engagement guaranteed.

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DEALERS IN THE CELEBATED
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Our own production!	The production of the rebels!
CHEAP AND SAFE!	DEAR & DANGEROUS!
Cherish it as a blessing.	Throw it to the dogs.

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THIS COMPANY HAVING RECENTLY made great improvements in their mode of manufacture, now offer a Candle superior to any other in the market. It gives a softer and more brilliant light and burns 6 hours to the pound longer than the best wax and sperm, and considering the strength of the light, is the most economical Candle in use.

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Unsurpassed by any KEROSENE manufactured. Is nearly COLORLESS, of a PLEASANT ODOR, and burns without smoke, or crusting the wick.

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Our coal-oil will burn in all Kerosene Lamps.

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